15.th SLOVENSKI OFTALMOLOŠKI KONGRES Z MEDNARODNO UDELEŽBO

SLOVENIAN CONGRESS OF OPHTHALMOLOGY WITH INTERNATIONAL PARTICIPATION

Center Brdo, Kranj, 15. – 17. 5. 2025

ZBORNIK POVZETKOV
BOOK OF ABSTRACTS

Združenje oftalmologov Slovenije

Očesna klinika,
Univerzitetni klinični center Ljubljana

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OČESNA KLINIKA, UNIVERZITETNI KLINIČNI CENTER LJUBLJANA
DEPARTMENT OF OPHTHALMOLOGY, UNIVERSITY MEDICAL CENTRE LJUBLJANA

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BOOK OF ABSTRACTS

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Z MEDNARODNO UDELEŽBO
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WITH INTERNATIONAL PARTICIPATION
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Spoštovane kolegice in kolegi, dragi gostje!

15. Slovenski oftalmološki kongres z mednarodno udeležbo letos poteka na posestvu Brdo pri Kranju, ki v maju zasije v posebej zeleni in navdihujoči podobi. Poleg spodbudnega okolja bomo nedvomno skupaj soustvarili tudi zanimivo in nepozabno strokovno srečanje.

Letošnji kongres je poseben zaradi rekordnega števila kakovostnih prispevkov z vseh subspecialističnih področij oftalmologije. Načrtovana sta pregled trenutnega stanja znotraj posameznih področij ter predstavitev razvojnih usmeritev. Ponovno bomo obudili tudi predstavitve v obliki posterjev. Mladi oftalmologi se bodo potegovali za nagrade za najboljše ustne prispevke in najboljše posterje. Pomembno vlogo pri pripravi letošnjega strokovnega programa je odigral tudi Odbor mladih oftalmologov.

*Novost kongresa je sklop **»Subspecialnost v soju žarometov«**, ki bo letos posvečen očesni plastični kirurgiji. Plenarno predavanje bo imela prof. dr. Brigita Drnovšek Olup. Vsi letošnji vabljeni tuji predavatelji so mednarodno priznani strokovnjaki in izvrstni govorci. Njihova predavanja bodo nedvomno poglobila naše znanje ter, upajmo, odprla vrata novim strokovnim povezavam.*

Vsi, ki smo zadnji dve leti intenzivno delali na pripravi kongresa, si želimo, da bi dogodek uspel tako na strokovni kot tudi na družabni ravni.

Dogodka takšnega obsega pa ne bi bilo mogoče izpeljati brez podpore sponzorjev in razstavljavcev, ki so se letos v lepem številu odzvali na vabilo k sodelovanju. Organizatorji se vam iskreno zahvaljujemo.

Posebna hvala pa gre vsem avtorjem in soavtorjem, ki ste s svojimi strokovnimi prispevki soustvarili bogat in premišljeno zasnovan program 15. Slovenskega oftalmološkega kongresa, na katerega vas lepo vabimo.

Dear colleagues and guests,

The 15th Slovenian Ophthalmology Congress with international participation will take place this year in May at Brdo Estate near Kranj, a truly inspiring and green place. Apart from the beautiful surroundings, we are sure to organize an unforgettable and stimulating conference.

This year's congress is characterized by a record number of high-quality contributions from all ophthalmological specialties. The program includes an overview of the current state of the field and a vision for future developments. We are also reintroducing poster presentations. Young ophthalmologists will compete for the prizes for the best oral and poster presentation. The Young Ophthalmologists Committee has played an active role in shaping this year's scientific program.

*A new feature this year is the **"Subspecialty in the Spotlight"** segment, which will focus on oculoplastic surgery. The plenary lecture will be given by Professor Brigita Drnovšek Olup. All invited international speakers are world-renowned experts and outstanding lecturers. Their presentations will undoubtedly enrich our knowledge and perhaps even stimulate new professional collaborations.*

All of us who have worked diligently over the past two years to prepare and organize this congress sincerely hope that it will be a success both scientifically and socially.

An event of this magnitude would not be possible without the generous support of sponsors and exhibitors, who have turned out in large numbers this year. The organizers thank you all from the bottom of our hearts.

Our special thanks go to all the authors and co-authors whose contributions have helped to shape the carefully compiled program of the 15th Slovenian Ophthalmology Congress. We cordially invite you to participate.

Prof. dr. Manca Tekavčič Pompe
Predsednica Združenja oftalmologov Slovenije
President of the Slovenian Society of Ophthalmology

Prof. dr. Mojca Globočnik Petrovič
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Head of the Department of Ophthalmology, UMC Ljubljana

ZBORNIK POVZETKOV

BOOK OF ABSTRACTS

STRABIZEM IN OSTALO

STRABISMUS AND MISC

OBRAVNAVA BOLNIKOV NA ODDELKU ZA ORTOPTIKO IN STRABIZEM, EDUKATIVNA DEJAVNOST, SMERNICE IN NOVOSTI

TREATMENT OF PATIENTS AT THE DEPARTMENT OF ORTHOPTICS AND STRABISMUS, EDUCATIONAL ACTIVITIES, GUIDELINES, AND INNOVATIONS

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NAMEN: Namen je predstaviti delovanje Oddelka za ortoptiko in strabizem. Na oddelku trenutno deluje 5 zdravnic oftalmologinj, 3 DMS. Vglavnem se ukvarjamo s patologijo povezano s škiljenjem, dvojnim vidom, ortoptično terapijo, edukacijo in kirurgijo zaradi strabizma pri odraslih in otrocih.
METODE: 1. V prispevku želimo prikazati nabor pregledov in raznolikost patologije, ki jo obravnavamo na oddelku za strabizem ter število in vrsto operativnih posegov v preteklem letu. 2. V sklopu pleoptične dejavnosti smo uvedli novo edukativno dejavnost, ki deluje zaenkrat pod okriljem pleoptičnih vaj; edukativno dejavnost izvajajo naše diplomirane medicinske sestre. V zadnjem letu smo ugotovili, da je potrebno in dobrodošlo izobraževanje in osveščanje naših bolnikov predvsem pri kontroli kratkovidnosti, pri ambliopiji in pri bolnikih z določenimi vrstami škiljenja in z motnjami binkularnega vida. 3. V lanskem letu smo na ZZZS uredili širitev indikacije za aplikacijo botulin toksina; sedaj je za določena stanja škiljenja, kjer obstaja indikacija za to, apliklacija botulina v obočesne mišice povrnjena s strani ZZZS. 4. Aktivno se udejstvujemo na mednarodnih kongresih. Meseca junija 2025 bomo na ESA v Istanbulu aktivno predstavili dva prispevka. 5. Redno spremljamo novosti, aktivno sodelujemo in raziskujemo tudi možnosti dihoptičnega zdravljenja ambliopije, v sklopu pleoptičnih vaj in edukativnih procesov. Vključeni smo vsi oftalmologi z oddelka za strabizem, kot tudi še 3 oftalmologinje z Otroškega očesnega oddelka.
REZULTATI: Predstavila bi čakalne dobe za napotitve redno in hitro (zelo hitro) in opredelila priporočila za napotitve iz sekundarnega nivoja na terciarni nivo.
ZAKLJUČEK: želela bi povdariti dobro prakso edukacije slabovidnosti in kratkovidnosti in bi vzpodbudila tudi ostale centre na sekundarnem nivoju k podobni obravnavi bolnikov z ambliopijo; čas bo pokazal ali so dihoptični treningi za ambliopijo inferiorni ali neinferiorni klasičnemu pokrivanju. Pojavlja se še potreba po ureditvi edukativne dejavnosti, da bi se na pravilen način obračunavala, trenutno je obračun 1 pleoptična vaja. Prav tako si prizadevamo korigirati utež operacije strabizma; trenutno je utež 0,64 SPP, kar je preračunano na 1094,00 EUR za operacijo strabizma v splošni anesteziji.

PURPOSE: The purpose is to present the main vision of the Orthoptics and Strabismus Department. The department currently employs five female ophthalmologists and three nurses. We mainly deal with pathology related to squint, double vision, orthoptic therapy, education, and surgery for strabismus in adults and children.
METHODS: 1. In this article, we want to show the range of examinations, the variety of pathologies we treat at the strabismus department, and the number and type of surgical interventions in the past year. 2. As part of the pleoptic activity, we have introduced a new educational activity, which currently operates under the umbrella of pleoptic exercises; our graduate nurses carry out educational activities. In the last year, we have realized that it is necessary and welcome to educate and raise awareness of our patients, especially in the control of myopia, amblyopia, and patients with certain types of squinting and binocular vision disorders. 3. Last year, we arranged the expansion of the indication for the application of botulinum toxin; now, for certain conditions of squinting, where there is an indication for it, the application of botulinum in the extraocular muscles is reimbursed by the Slovene public health insurance. 4. We actively participate in international meetings. In June 2025, we will actively

present two papers at ESA in Istanbul. 5. We regularly monitor innovations, actively participate, and research the possibilities of dichoptic treatment of amblyopia as part of pleoptic exercises and educational processes. All ophthalmologists from the strabismus department are included, as well as 3 other ophthalmologists from the Children's Eye Department.
RESULTS: I want to introduce waiting times for different time referrals and define recommendations for referrals from other hospitals or departments to our department.
CONCLUSION: I would like to stress the good practice of amblyopia and myopia education and would also encourage other centers to educate patients with amblyopia in a similar manner; time will tell whether dichoptic training for amblyopia is inferior or non-inferior to classical patching. There is also a need to regulate the educational activity in order to calculate it correctly, currently, the calculation is 1 pleoptic exercise. We also aim to correct the worth of strabismus surgery; currently, the worth is 0.64 SPP, which is converted to EUR 1094,00 for strabismus surgery under general anesthesia.

PREDSTAVITEV PRIMERA: DEKOMPENZACIJA INTERMITENTNE EKSOTROPIJE ALI INTRAKRANIALNI TUMOR?

CASE REPORT: DECOMPENSATION OF INTERMITTENT EXOTROPIA OR INTRACRANIAL TUMOR?

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Namen prispevka je opozoriti na možne nevarne etiologije strabizma. Prikazan je primer monokulanrega divergentnega strabizma za katerega se izkaže, da gre za intrakranialni tumor. 2 letna deklica je bila obravnavana v urgentni ambulanti očesne klinike zaradi 4 dni trajajočega občasnega divergentnega odklona desnega očesa. Pred nastankom težav je bila visoko febrilna (40°C) ob infektu. Med pregledom je bil oftalmološki status v mejah normale, vključujoč z odsotnostjo strabizma (le- ta je bil viden na fotografijah). Vidna ostrina in izmerjena refraktivna napaka sta bili ustrezni za starost in bilo videti ev. strukturnih patologij zrkla. Deklica je bila napotena za nadaljnje obravnave v ambulanto za ortoptiko in strabolgijo, ter v ambulanto za otroško in mladostniško nevrologijo. V sledečih tednih je škiljenje desnega očesa postalo vztrajajoče, addukcija desnega očesa ni segala čez medialno linijo, pojavili sta se tudi ptoza in anizokoria s širšo vendar ustrezno reaktivno desno zenico (pareza okulomotoriusa) ter eksoftalmus. Deklica je opravila urgentni pregled na Pediatrični kliniki, kjer z izjemo opisanih sprememb v nevrološkem statusu niso bila prisotna odstopanja. Napotena je bila na MR glave na katerem je bil razviden ekspanzivni proces velikosti 14x 7mm v predelu kavernoznega sinusa desno, s širjenjem v paraselarno regijo in skozi zgornjo fisuro orbitalno v apeks desne orbite, s širjenjem vzdolž spodnjega in lateralnega m. rektusa. Elektrofizioloških preiskave so pokazale odstopanja postretinalnega signala (reversal VEP je bil zakasnjen, reversal in onset VEP pa manj spremenjena). Opravila je biopsijo lezije ki je razkrila da gre za inflamatorni miofibroblastni tumor. Prejala je terapijo z Entrectinibe ob kateri sta se tako strabizem kot pareza n. okulomotoriusa izboljšala. **ZAKLJUČEK:** Prikazan je primer povsem običajnega pričetka težav s strabizmom vendar z dramatičnim slabšanjem stanja v nadaljevalnih tednih, kar je zahtevalo dodatne diagnostične preiskave in vodilo v razkritje intrakranialnega tumorja.

The purpose of the article is to draw attention to the possible dangerous etiologies of strabismus. A case of monocular divergent strabismus is presented, which turned out to be an intracranial tumor. A 2-year-old girl was treated in the emergency department of the eye clinic due to a 4 days history of of intermittent divergent deviation of the right eye. Before the onset of the squint, she had a high fever (40°C) due to an infection. During the examination, the ophthalmological status was within normal limits, including absence of strabismus (which was only visible on photographs provided by parents). Visual acuity and measured refractive error were appropriate for age and no structural pathologies of the eye were seen. The child was referred for further treatment to the outpatient clinic of orthoptics and strabolgy, and to the outpatient clinic for child and adolescent neurology. In the following weeks, the strabismus of the right eye became persistent, the adduction of the right eye did not extend beyond the medial line, ptosis and anisocoria with a wider but adequately reactive right pupil (oculomotor paresis) and exophthalmos also appeared. The girl underwent an urgent examination at the Pediatric Clinic, where, with the exception of the described signs no abnormalities were present in neurological status. The child has been referred for a head MRI, which showed an expansive process measuring 14x 7mm in the right cavernous sinus, spreading into the parasellar region and through the superior orbital fissure into the apex of the right orbit, spreading along the inferior and lateral rectus muscles. Electrophysiological examinations showed abnormalities of the postretinal signal (reversal VEP was delayed, reversal and onset VEP were less altered). A biopsy of the lesion was performed, which revealed an inflammatory myofibroblastic tumor. She received therapy with Entrectinib, with led to an improvement of both strabismus and oculomotor nerve paresis.

CONCLUSION: A case of a typical onset of strabismus problems was presented, but with a dramatic deterioration in the condition in the following weeks, which required additional diagnostic examinations and led to the discovery of an intracranial tumor.

PRIROJENI BROWNOV IN DUANOV SINDROM – PREPOZNAVANJE IN OBRAVNAVA

CONGENITAL BROWN AND DUANE SYNDROME – RECOGNITION AND TREATMENT

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NAMEN: Prepoznava, ocena kliničnih značilnosti in obravnava pacientov z prirojenim Brownovim in Duanovim sindromom.
METODE: Retrospektivna analiza 15 otrok s prirojenim Brownovim in Duanovim sindromom, ki so bili napoteni za diagnostiko, vodenje in terapijo na Očesno kliniko v Ljubljano pod diagnozo konvergentnega ali vertikalnega škiljenja, ki se ne popravlja. Za vsakega pacienta smo analizirali starost, spol, prisotnost drugih bolezni, najboljšo korigirano vidno ostrino (BCVA), prisotnost vertikalnega in horizontalnega škiljenja, gibljivost zrkel, škilni kot, binokularni vid in položaj glave.
REZULTATI: Skupaj smo analizirali 15 otrok s prirojeno motnjo gibljivosti zrkel. Povprečna starost ob prvem pregledu je bila 3,5 let (2-7 let). Brownov sindrom smo diagnosticirali klinično kot omejeno aktivno ali pasivno gibljivost pri pogledu navzgor v addukciji, z normalno addukcijo v depresiji. Duanov sindrom smo diagnosticirali kot motnjo gibljivosti v abdukciji, z zožanjem očesne reže in retrakcijo zrkla pri addukciji. Vsi otroci so imeli tip 1 Duanovega sindroma. Vertikalni odklon pri pacientih z Brownovim sindromom je bil od 0 do 5 stopinj, horizontalni odklon pri pacientih z Duanovim sindromom je bil med 5 in 20 stopinj. Položaj glave je bil pri vseh otrocih izravnan. Nismo opažali nagibanja ali obračanja glave. Vidna ostrina je bila pri vseh otrocih 0,8 sli več brez korekcije, pri nobenem izmed otrok ni bila prisotna težja slabovidnost na prizadetem očesu. 5 otrokom so bila po refrakciji v cikloplegiji predpisana očala.
ZAKLJUČEK: Brownov in Duanov sindrom sta mehanski motnji in pogosti obliki nekonkomitantnega škiljenja pri otrocih. Sindroma nista povezana s slabo vidno ostrino in sta v večini primerov dobro kompenzirana. Prepoznavanje je zato na začetku zaradi dobre kompenzacije težje in se manifestira šele, ko se stanje spremeni. Dokler je položaj glave normalen in otrok gleda z obema očesom (ne zapira slabšega), jih lahko samo opazujemo in dodatne metode zdravljenja niso potrebne.

PURPOSE: To identify, assess clinical features and monitor patients with congenital Brown and Duane syndrome.
METHODS: Retrospective analysis of 15 children with congenital Brown's and Duan's syndrome who were referred for diagnosis, management and therapy to the Eye Clinic in Ljubljana under the diagnosis of convergent or vertical squinting, which does not correct. For each patient we analyzed age, gender, presence of other diseases, best corrected visual acuity (BCVA), presence of vertical and horizontal deviation, motility, angle of deviation, binocular vision and head posture.
RESULTS: A total of 15 children with congenital gaze mobility disorder were analysed. The mean age at the first examination was 3.5 years (2-7 years). Brown's syndrome has been diagnosed clinically as limited active or passive elevation in adduction but normal depression in adduction. Duane syndrome was diagnosed as horizontal duction deficits, with narrowing of the palpebral fissure and globe retraction in adduction. All of the children had type 1 Duane syndrome. The vertical deviation in patients with Brown's syndrome was from 0 to 5 degrees, the horizontal deviation in patients with Duan syndrome was between 5 and 20 degrees. The position of the head was straight in all children. We didn't notice any tilting or turning of the head. Visual acuity in all children was 0,8 or more without correction, none of the children had severe visual impairment in the affected eye. In 5 children glasses were prescribed after refraction in cycloplegia.

CONCLUSION: Brown's and Duan's syndromes are mechanical disorders and common forms of nonconcomitant strabismus in children. The syndromes are not associated with poor visual acuity and are well compensated in most cases. Recognition is therefore more difficult at the beginning due to good compensation and manifests itself only when the situation changes. As long as the position of the head is normal and the child looks with both eyes (not closing the worse), they can only be observed and additional methods of treatment are not required.

TRANSPOZICIJA ZGORNJEGA IN SPODNJEGA REKTUSA V KOMBINACIJI Z INTRAOPERATIVNO APLIKACIJO BOTULINSKEGA TOKSINA PRI PARALITIČNEM STRABIZMU IMA LAHKO MOČAN IN UGODEN POOPERATIVNI UČINEK

THE TRANSPOSITION OF THE SUPERIOR AND INFERIOR RECTI MUSCLES COMBINED WITH THE INTRAOPERATIVE APPLICATION OF BOTULINUM TOXIN IN PARALYTIC STRABISMUS CAN HAVE A FAVORABLE POSTOPERATIVE EFFECT

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NAMEN: prispevka je predstaviti metodo transpozicije navpičnih rektusov z intraoperativno aplikacijo botulin toksina A v ipsilateralni medialni rektus pri zdravljenju paralitičnega strabizma po kronični parezi šestega možganskega živca.
METODE: Pri težkih parezah šestega možganskega živca so se izkazale za koristne operativne transpozicije zgornjega in spodnjega rektusa ob paralitični lateralni rektus. Poznamo številne tehnike za izvajanje teh transpozicij, kot so tehnika po Hummelscheimu, O'connorju, Fosterju, Jensenu ali Nishidi. Prve 4 zgoraj omenjene tehnike imajo povečano tveganje za ishemijo sprednjega segmenta. Etiologilja pareze 6. možganskega živca je raznolika: travmatska, prirojena, neoplastična, vaskularna ali idiopatska. Primanjkljaj abdukcije (pogled vstran) smo vrednotili po četrtinah dukcije do primarne črte in od primarne črte (od - 4 do + 4; v tem primeru primarno lego označimo z 0). Predoperativno vedno izvedemo pasivni dukcijski test, ki je v našem primeru pri bolnici izključil restrikcijo obočenih mišic. V prispevku je predstavljen primer bolnice z dolgotrajno levostransko kronično parezo šestega možganskega živca. Etiologija pareze ni bila znana. Ob prvem pregledu je bolnica navedla, da je pred približno 4 leti levo oko čedalje bolj začela odklanjati navznoter. Ob pregledu smo ugotovili, da je primanjkljaj abdukcije med -1 do 0, torej paralitično oko ne gre čez primarno črto. Gospa je opravila MR glave, CT glave, UZ vratnega žilja in UZ srca. Ščitnični hormoni so bili v mejah normale. Niso ugotavljali motenj v živčnomišičnem prenosu. Ugotovljeno je imela blago hiperholesterolemijo, ki jo je uspešno kontrolirala z dieto. Vsi ostali izvidi so bili v mejah normale. Klinično bi pri gospe lahko šlo tudi za Duanov sindrom, vendar je trdila, da so se težave z omejeno bulbomotoriko in škiljenjem začele pred 4 leti.
REZULTATI: Pri bolnici smo pred operativnim posegom izmerili objektivni škilni kot +34°. Fuzije in globinskega vida ni imela. Na levem očesui je bila vidna ostrina slabša (nimamo podatka od kdaj, možna je supresija ali slabovidnost od prej). Sprednji očesni deli, optični mediji in očesno ozadje so bili primerni. Najboljša korigirana vidna ostrina pred operacijo desno je bila 1,0 cc in levo 0,3 cc. Zaradi tveganja za ishemijo sprednjega segmenta smo lahko operativno prekinili le dve obočesni mišici, moč medialnega rektusa, ki je bil v kontrakturi pa smo oslabili z botulinskim toksinom, v mišico smo injicirali 10 IU botulin toksina A. Objektivni škilni kot je bil 3 mesece po operaciji - 15°, 6 mesecev po operaciji - 8°, 9 mesecev po operaciji pa -1°. Fuzije in globinskega vida ni imela.
ZAKLJUČEK: Transpozicija zgornjega in spodnjega rektusa ima lahko zadovoljiv funkcionalni in pooperativni učinek. Opisane so številne tehnike transpozicije mišic, vendar zaradi nevarnosti ishemije sprednjega segmenta ne smemo prekiniti hkrati treh obočesnih mišic, zato je aplikacija botulina v mišico, ki jo želimo oslabiti, lahko v tem primeru zelo uporabna.

PURPOSE: The purpose of this paper is to present the method of vertical recti muscle transposition with intraoperative injection of botulinum toxin in the ipsilateral medial rectus in the treatment of paralytic strabismus after chronic paresis of the sixth cranial nerve.
METHODS: In severe paresis of the sixth cranial nerve, transpositions of the upper and lower rectus muscles against the paralytic lateral rectus have been particularly useful. There are different techniques for performing these transpositions, such as the Hummelscheim, O'Connor, Foster, Jensen, or Nishida technique. The first four techniques mentioned above have an increased risk of anterior segment ischemia. The etiology of sixth cranial nerve paresis is diverse: traumatic, congenital, neoplastic, vascular, and idiopathic. The abduction deficit was evaluated by quarters of duction to the primary line and from the primary line (from -4 to +4; in this case, 0 is the primary position). Preoperatively, we always perform a passive duction test, which in our case ruled out restriction of the extraocular muscles. Here, we present a case of a patient with long-term left-sided chronic paresis of the sixth cranial nerve. The etiology of the paresis is unknown. At the first examination, the patient said that at least 4 years ago, her left eye started turning inward. Upon examination, we found that the abduction deficit was between -1 and 0, i.e., the paralytic eye did not cross the primary line. The patient underwent an MRI and CT of the head and diagnostic tests such as heart ultrasound and carotid vessels Doppler ultrasound to rule out any other causative factors for the abducens paresis. Her thyroid hormones were normal, and she had slight hypercholesterolemia, which she had under control with diet. Myasthenia was excluded. Duane syndrome was less probable because she had normal eye movements and no squint before 4 years.
RESULTS: The patient's preoperative objective squint angle was +34°. She had no fusion or stereo. The left eye was suppressed or amblyopic. Optic media were clear, and the fundi were unremarkable. The best corrected visual acuity on the right was 1,0 cc and on the left 0,3 cc. Due to the risk of ischemia of the anterior segment, we could move only two extraocular muscles at the same time, and the medial rectus, which was in contracture, was weakened with botulinum toxin type A. We administered 10 IU of botulinum toxin into the left medial rectus muscle. 3 months postoperatively, the squint angle was -15°; 6 months postoperatively -8° and 9 months postoperatively -1°. The patient had no fusion or stereo.
CONCLUSION: Many muscle transposition techniques have been described, but we must be careful not to cause ischemia of the anterior segment with these procedures. Applying botulinum toxin in the muscle we want to weaken and not surgically move can be very useful in this case.

NAPOTITVE BOLNIKOV NA OČESNI ULTRAZVOK

REFERRALS OF PATIENTS FOR OCULAR ULTRASOUND

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Predstavljena bo ultrazvočna diagnostika v oftalmologiji z različnimi vrstami ultrazvokov. Opisali bomo prednosti in pomanjkljivosti očesnega ultrazvoka v primerjavi z drugimi slikovnimi preiskavami. Predstavili bomo različne indikacije za napotitev bolnika na očesni ultrazvok ter možnosti izboljšav v diagnostiki in organizaciji ultrazvočne dejavnosti.

We will present ultrasound diagnostics in ophthalmology using different types of ultrasounds. We will describe the advantages and disadvantages of eye ultrasound compared to other imaging tests. We will also present the various indications for referring patients to an eye ultrasound and discuss the possibilities of improving diagnostics and organizing an ultrasound service.

NEVROOFTALMOLOGIJA IN MREŽNIČNE DISTROFIJE

NEURO-OPHTHALMOLOGY AND RETINAL DYSTROPHIES

OBRAVNAVA NEVROOFTALMOLOŠKEGA BOLNIKA NA SEKUNDARNI RAVNI: SISTEMATIČEN PRISTOP IN NAPOTITEV NA TERCIARNO RAVEN

MANAGEMENT OF NEURO-OPHTHALMOLOGICAL PATIENTS AT THE SECONDARY LEVEL: GUIDELINES AND REFERRAL CRITERIA

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NAMEN: Predstaviti priporočila za obravnavo nevrooftalmoloških bolnikov na sekundarni ravni ter opredeliti kriterije za napotitev v terciarni center.
METODE: Na podlagi kliničnih izkušenj in mednarodnih priporočil smo pregledali in opredelili diagnostične postopke, ki se naj izvedejo na sekundarni ravni v ambulantah ali regionalnih bolnišnicah.
REZULTATI: Vsak oftalmolog na sekundarni ravni mora pred napotitvijo opraviti temeljit klinični pregled, vključno z oceno vidne ostrine, barvnega vida, bulbomotorike, zeničnih reakcij ter s pregledom očesnega ozadja, obenem naj vsak pregled obsega tudi perimetrijo ter slikanje vidnega živca in makule z OCT. Pred napotitvijo je prav tako potrebno opraviti vse razpoložljive relevantne preiskave. V zdravstvenih domovih so dostopne osnovne laboratorijske analize krvi, vključno s hemogramom, diferencialno krvno sliko, CRP in sedimentacijo, kar je nujno čimprej opraviti pri sumu na gigantocelični arteritis. Oftalmologi brez dostopa do osnovnih laboratorijskih preiskav v lastni ustanovi bolnika napotijo v regionalno bolnišnico. Iz samoplačniških ambulant se bolnika napoti neposredno z belo napotnico, ki ima enako veljavnost kot zelena. V regionalnih bolnišnicah se opravi dodatna slikovna diagnostika (FA, MR) ter nevrološki ali drugi specialistični pregled. Pri sumu na vnetne optične nevropatije je smiselno v regionalnih bolnišnicah čimprej opraviti še nekatere imunološke preiskave (anti-MOG, anti-AQP4, ANA, ANCA, serumski ACE), ter osnovne serološke preiskave. Tipične optične nevropatije, kot so nevnetna anteriorna ishemična optična nevropatija, optični nevritis v okviru MS in papiledem v kronični fazi, je mogoče učinkovito obravnavati in voditi tudi v regijskih bolnišnicah in ti bolniki običajno ne potrebujejo obravnave v terciarnem centru. Za subspecialistično obravnavo v najbližji terciarni center pa je potrebno napotiti bolnike s hitro napredujočo okvaro vida, z atipičnim potekom ali klinično sliko, s sumom ali dokazano intrakranialno patologijo ali tiste, pri katerih diagnoza ostaja nejasna po vseh opravljenih osnovnih diagnostičnih preiskavah. Indikacija za napotitev na elektrofiziološke preiskave naj bi bila v domeni terciarnih centrov.
ZAKLJUČEK: Učinkovita obravnava nevrooftalmoloških bolnikov na sekundarni ravni zahteva sistematičen pristop k diagnostiki in prepoznavanju tipičnih kliničnih slik. Oftalmolog na sekundarni ravni mora pred napotitvijo opraviti temeljit klinični pregled, vključno z vidnim poljem in OCT, ter vse razpoložljive laboratorijske in slikovne preiskave. V terciarni center napoti le bolnike za kompleksnejšo obravnavo in diagnostiko, ki je ni mogoče zagotoviti na sekundarni ravni. V vseh nejasnih primerih je smiselna tudi telefonska konzultacija z nevrooftalmologom.

PURPOSE: To present recommendations for the management of neuro-ophthalmological patients at the secondary level and establish criteria for referral to a tertiary center.
METHODS: Based on clinical experience and international guidelines, we defined the accessible diagnostic procedures that should be performed at the secondary level before referral to a tertiary center.
RESULTS: Every ophthalmologist at the secondary level must conduct a thorough clinical examination, including an assessment of visual acuity, color vision, ocular motility, pupillary reactions, and fundoscopy. Each examination should include visual field testing and OCT of the optic nerve and macula. Before referral, all available relevant tests should be performed. Basic laboratory blood analyses, including complete blood count, differential blood count, CRP, and erythrocyte sedimentation rate, are accessible in primary healthcare centers and must be

urgently conducted in cases of suspected giant cell arteritis. Ophthalmologists without access to basic laboratory testing in their institution should refer the patient to a regional hospital. In private outpatient clinics, patients should be referred directly using a white referral form, which holds the same validity as the green. Typical optic neuropathies, such as non-inflammatory anterior ischemic optic neuropathy, optic neuritis in the context of multiple sclerosis, and chronic-stage papilledema, can be effectively managed in regional hospitals, and these patients typically do not require referral to a tertiary center. However, patients with rapidly progressive visual impairment, atypical disease course or clinical presentation, suspected or confirmed intracranial pathology, or cases where the diagnosis remains unclear despite all standard diagnostic tests, should be referred to the nearest tertiary center for subspecialist evaluation. The indication for electrophysiological testing should be determined by tertiary centers.

CONCLUSION: Effective management of neuro-ophthalmological patients at the secondary level requires a systematic approach to diagnostics and recognition of typical clinical presentations. Ophthalmologists at the secondary level must perform a comprehensive clinical examination before referral, including visual field testing and OCT, as well as all available laboratory and imaging tests. Referral to a tertiary center should be reserved for patients requiring more complex evaluation and diagnostics that cannot be provided at the secondary level. In unclear cases, telephone consultation with a neuro-ophthalmologist is advisable.

DRUZE VIDNEGA ŽIVCA: SODOBNI PRISTOPI K DIAGNOSTIKI IN SPREMLJANJU

OPTIC DISC DRUSEN: MODERN APPROACHES TO DIAGNOSIS AND MONITORING

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NAMEN: predstaviti najnovejša priporočila za diagnostiko in spremljanje druz vidnega živca (ODD).
METODE: Sistematičen pregled relevantne strokovne literature o ODD, s poudarkom na diagnostiki z uporabo naprednih slikovnih metod.
REZULTATI: ODD so acelularni kalcificirani depoziti, ki se pojavljajo v 0.3-2% populacije in lahko pri nekaterih bolnikih povzročijo postopno izgubo perifernega vida. Ključno je razlikovanje druz od edema papile in papiledema, saj imajo ta stanja različno etiologijo in zahtevajo različen pristop k obravnavi. Izrazite površinske druze so vidne že z oftalmoskopijo, v blažjih primerih pa je potrebna dodatna diagnostika za razlikovanje od drugih optičnih nevropatij. Tradicionalne diagnostične metode, kot so fundusna autofluorescenca (AF), B-scan ultrazvok (UZ), računalniška tomografija (CT) in zgodnje generacije optične koherentne tomografije (OCT) imajo svoje prednosti in omejitve – z UZ in CT ni mogoče zaznati manj kalciniranih druz, medtem ko AF in zgodnejše metode OCT lahko zaznajo le površinske druze. Optic Disc Drusen Studies (ODDS) Consortium zato sedaj za prikaz ODD priporoča uporabo OCT spektralne domene s povečano globino vizualizacije (t. i. “enhanced depth imaging” ali EDI - OCT) kot osrednjo diagnostično metodo, saj le ta omogoča zaznavo tako povrhnjih, kot globokih druz, ki so opredeljene kot spremembe na OCT z jedrom nizkega signala in hiperreflektivnim anteriornim robom. Prav tako pa omogoča razlikovanje druz od drugih struktur, kot so npr. peripapilarne hiperreflektivne ovoidne masne strukture (PHOMS). OCT omogoča tudi prikaz kazalcev nevroaksonske celovitosti, kot sta debelina sloja živčnih vlaken (RNFL) in ganglijskih celic (GCL) ter oceno edema papile. Raziskuje se vloga OCTA kot dodatne neinvazivne slikovne metode za oceno mikrovaskularnih sprememb v vidnem živcu, ki so lahko povezane s progresivno izgubo vidnega polja. Smiselna je uporaba OCT in perimetrije za spremljanje bolnikov z ODD glede na klinično sliko – pri simptomatskih bolnikih naj bo spremljanje pogostejše.
ZAKLJUČEK: Napredek v slikovnih tehnikah, zlasti uporaba OCT in OCTA, je bistveno izboljšal naše razumevanje in sposobnost odkrivanja ODD. EDI-OCT se priporoča kot primarna diagnostična metoda za odkrivanje druz z boljšo senzitivnostjo kot UZ ali AF. Redno spremljanje bolnikov v skladu z aktualnimi priporočili je pomembno za zgodnje odkrivanje sprememb in preprečevanje potencialnih zapletov.

PURPOSE: This review aims to present the latest recommendations for diagnosing and monitoring optic disc drusen (ODD).
METHODS: A systematic review of relevant scientific literature focusing on diagnosis using advanced imaging techniques.
RESULTS: Optic disc drusen are acellular, calcified deposits found in 0.3–2% of the population. and can lead to progressive peripheral vision loss in some patients. It is crucial to differentiate ODD from optic disc edema or papilledema, as these conditions have different causes and management approaches. While superficial drusen can be identified by ophthalmoscopy, additional imaging is necessary to detect deeper drusen and distinguish them from other optic neuropathies. Traditional diagnostic methods, such as fundus autofluorescence (AF), B-scan ultrasonography, computed tomography (CT), and older optical coherence tomography (OCT) technologies, each have their benefits and limitations. Ultrasound and CT may miss less calcified drusen, while AF and earlier OCT systems can only detect superficial ones. Consequently, the Optic Disc Drusen Studies (ODDS) Consortium now recommends spectral-domain OCT with enhanced depth imaging (EDI-OCT) as the primary diagnostic tool. EDI-

OCT enables the visualization of both superficial and deep drusen, presenting them as low-signal core structures with a hyperreflective anterior border. This technique also helps differentiate drusen from other anatomical structures, such as peripapillary hyperreflective ovoid mass-like structures (PHOMS). OCT provides valuable insights into neuroaxonal integrity, including measurements of retinal nerve fiber layer (RNFL) and ganglion cell layer (GCL) thickness. OCT angiography (OCTA) is also being explored as a non-invasive tool to assess microvascular changes in the optic nerve, potentially linked to progressive visual field loss. Patients with ODD should undergo periodic monitoring using OCT and perimetry, adjusted to their clinical presentation. More frequent follow-ups are recommended for symptomatic patients to detect changes early and prevent complications.
CONCLUSION: Advances in imaging techniques, especially OCT and OCTA, have greatly improved the detection and understanding of ODD. EDI-OCT is now considered the primary diagnostic tool, superior to ultrasound and AF. Regular monitoring following current guidelines is important for early detection of disease progression and prevention of complications.

MOGAD: BOLEZEN MNOGIH OBRAZOV

MOGAD: A DISEASE OF MANY FACES

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Namen prispevka je predstaviti tri klinične primere bolezni, povzročene s protitelesi proti mielin oligodendrocitnemu glikoproteinu (Myelin oligodendrocyte glycoprotein antibody disease – MOGAD), s povsem različnim potekom. 56-letni bolnik je imel zgolj eno epizodo obojestranskega papilitisa, bolečo bulbomotoriko in zmerno poslabšanje vida. MR glave in vratne hrbtenjače nista prikazali pridruženih demielinizacijskih lezij. Stanje se je povsem izboljšalo ob kortikosteroidni terapiji po protokolu ONTT (Optic Neuritis Treatment Trial). 16-letna bolnica je imela tri recidive desnostranskega papilitisa in dva recidiva levostranskega papilitisa. Poleg dolgotrajne kortikosteroidne terapije je bila potrebna še terapija z mesečnimi aplikacijami IVIG ter uvedba rituksimaba. MR glave in vratne hrbtenjače sta prikazali demielinizacijsko lezijo v levem talamusu ter v daljšem poteku obeh vidnih živcev. 14-letna bolnica z znanim levkodistrofičnim tipom MOGAD je ob ukinitvi tocilizumaba razvila obojestranski optični nevritis s hudim poslabšanjem vida. MR glave in celotne hrbtenjače sta prikazali obsežen progres demielinizacijskih sprememb v celotni desni hemisferi s področji obarvanja pod bazalnimi gangliji, obojestransko ter levo insularno. Opisan je bil obsežen zajem posteriornega dela obeh vidnih živcev ter kijazme. Vidna funkcija se je zaradi nezadostnega odziva na intenzivno kortikosteroidno zdravljenje povrnila šele po šestih ciklusih plazmafereze. Trenutno je klinična slika stabilna ob mesečnih aplikacijah IVIG.

The aim of this report is to present three clinical cases of myelin oligodendrocyte glycoprotein antibody disease (MOGAD) with completely different courses. A 56-year-old male patient with only one episode of bilateral papillitis, pain on eye movement, and moderate visual impairment. MRI of the brain and cervical spine did not reveal any associated demyelinating lesions. His condition fully improved with corticosteroid therapy following the ONTT (Optic Neuritis Treatment Trial) protocol. A 16-year-old female patient with three relapses of right-sided papillitis and two relapses of left-sided papillitis, requiring, in addition to prolonged corticosteroid therapy, treatment with monthly IVIG applications and the introduction of rituximab. MRI of the brain and cervical spine revealed a demyelinating lesion in the left thalamus and an extended involvement of both optic nerves. A 14-year-old female patient with a known leukodystrophic type of MOGAD, who developed bilateral optic neuritis with severe visual impairment after the discontinuation of tocilizumab. MRI of the brain and entire spinal cord showed extensive progression of demyelinating changes throughout the right hemisphere, with areas of contrast enhancement, as well as involvement under both basal ganglia and in the left insular region. Extensive involvement of the posterior part of both optic nerves and the chiasm was described. Due to an insufficient response to intensive corticosteroid treatment, visual function was only restored after six cycles of plasmapheresis. The clinical condition is currently stable with monthly IVIG applications.

OD ALERGIJ DO EMBOLIJ: ISHEMIČNI DOGODKI OB ZDRAVLJENJU Z OMALIZUMABOM

FROM ITCH TO GLITCH: ISCHEMIC EVENTS DURING OMALIZUMAB TREATMENT

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Prikaz primera 70-letnega bolnika s spontano kronično urtikarijo, ki je ob terapiji z imunomodulatornim zdravilom omalizumab razvil ishemične cerebrovaskularne dogodke. Retrospektivna analiza bolnika, ki je tri tedne po prejetju prve aplikacije omalizumaba obiskal urgentno nevrološko ambulanto zaradi vrtoglavice, nestabilnosti pri hoji in glavobola. Na CT glave je bil prikazan lakunarni ishemični cerebrovaskularni dogodek (ICV) ter že znano stanje po embolizaciji anevrizme sprednje komunikantne arterije. Klinično so bile prisotne levostranska hemipareza in desnostranska centralna pareza obraznega živca. Teden dni po prejetju druge aplikacije omalizumaba je bolnik poročal o izpadu zgornje polovice vidnega polja desnega očesa. Klinično je bil viden ishemičen edem v predelu spodnje temporalne arterije desno, kar je kazalo na embolično okluzijo veje centralne retinalne arterije. CTA možganskega in vratnega ožilja je prikazal hemodinamsko pomembno zožitev desne ACI. Bolnik je bil predstavljen na nevroradiološkem konziliju, kjer so svetovali revaskularizacijski poseg (TEA). Statična perimetrija je pokazala zgornji altitudinalni izpad desno. Bolniku je bila uvedena dvotirna antiagregacijska terapija z dodatkom statina. Dva tedna po prejetju druge aplikacije omalizumaba je bolnik ponovno obiskal urgentno nevrološko ambulanto zaradi disfazije in desnostranske hemipareze. CT perfuzija je prikazala penumbro v posteriorni polovici področja leve ACM, indicirana je bila tromboliza, po kateri je prišlo do izboljšanja kliničnega stanja. Omalizumab je biološko zdravilo, ki se uporablja za zdravljenje hude astme, nosnih polipov in kronične urtikarije. Kljub dokazani učinkovitosti pri obvladovanju teh bolezni pa v redkih primerih poročajo tudi o neželenih učinkih, kot so ishemični cerebrovaskularni in kardiovaskularni dogodki. V tem primeru je bila terapija z omalizumabom, ob ustrezni obravnavi dejavnikov tveganja za kardiovaskularne dogodke, ukinjena.

Case report of a 70-Year-Old patient with spontaneous chronic urticaria who developed ischemic cerebrovascular events during omalizumab therapy. A retrospective analysis of a patient who, three weeks after receiving the first dose of omalizumab, visited the emergency neurology clinic due to dizziness, gait instability, and headache. A CT scan of the head revealed a lacunar ischemic cerebrovascular event (ICV) and a known condition after the embolization of an aneurysm of the anterior communicating artery. Clinically, there was left-sided hemiparesis and right-sided central facial nerve palsy. One week after receiving the second dose of omalizumab, the patient reported an upper visual field loss in the right eye. Clinically, ischemic edema was observed in the area of the right inferior temporal artery, suggesting an embolic occlusion of the branch of the central retinal artery. A CTA of the brain and cervical vasculature showed hemodynamically significant stenosis of the right internal carotid artery (ICA). The patient was presented at a neuroradiological consult, where a revascularization procedure (TEA) was recommended. Static perimetry showed an upper altitudinal visual field loss in the right eye. The patient was started on dual antiplatelet therapy with the addition of a statin. Two weeks after receiving the second dose of omalizumab, the patient again visited the emergency neurology clinic due to dysphasia and right-sided hemiparesis. CT perfusion imaging showed a penumbra in the posterior portion of the left middle cerebral artery (MCA) territory, and thrombolysis was indicated, after which there was clinical improvement in the patient's condition. Omalizumab is a biologic medication used to treat severe asthma, nasal polyps, and chronic urticaria. Despite its proven effectiveness in managing these conditions, rare reports have linked it to adverse effects, such as ischemic cerebrovascular and cardiovascular events. In this case, the therapy with omalizumab was discontinued, following appropriate management of cardiovascular risk factors.

VPLIV PRIKRAJŠANJA SPANJA NA OČESNO HOMEOSTAZO

DEPRIVATION OF SLEEP IN EYE AND VISUAL HOMEOSTASIS

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Prikrajšanje spanja na 4 in 6 ur na noč lahko signifikantno moti očesno homeostazo, ki ima več fizioloških in funkcionalnih posledic. Spanje s 5 do 7 cikli, katerih eden traja 90 do 110 minut, je bistveno za regeneracijo celic in višjih organskih struktur od površine zrkla do možganske skorje. Ko je spanje kronično krajše od 6 ur z motnjami v posameznem ciklu, je oko zjutraj utrujeno, pordelo , suho, itd. Prisotna je utrujenost, slabši spomin in slabo počutje. Kronično pomanjkanje spanja moti homeostazo intraokularnega in intrakranialnega tlaka, moti regeneracijo ganglijskih in drugih celic mrežnice, glimfatično cirkulacijo, cirkadiani ritem , itd. Slabše kognitivno procesiranje in pozornost moti na vidno funkcijo vezane kognitivne procese v negativnih stresnih okoliščinah. V zaključku: spanje v 5 do 7 ciklih na noč je optimalno za normalno delovanje vidnega sistema in očesa podnevi.

Deprivation of sleep between 4 and 6 hours per night can significantly disrupt eye and visual homeostasis, leading to several physiological and functional negative efects. Sleep in 5 to 7 cycles of 90 to 110 minutes is essential for regeneration of cells and higher structures in visual system from eye surface to cortical structures. When duration of sleep is shorter than 6 hours with disrupted cycles, eye is prone to fatique, redness, dryness etc.in the morning. Memory fog, tiredness and bad feeling is present. Chronic sleep deprivation lead to disrupted homeostasis of intraocular(IOP) and intracranial presure (ICP), disrupt regeration proces in ganglion cells, retinal cells , glimphatic circulation, circadiane rytm , etc. Reduced cognitive processing and attention impares visualy influenced cognitive tasks, especialy in negative stress situations. In coclusion, adequate sleep of 5 to 7 cycles per night is essential for optimal eye and visual functioning during day time.

NAJDALJŠA KOHORTNA ŠTUDIJA SPREMLJANJA BOLNIKOV S STARGARDTOVO DISTROFIJO

NATURAL HISTORY OF STARGARDT DISEASE: THE LONGEST FOLLOW UP COHORT STUDY

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NAMEN: V študiji smo spremljali naravni potek bolezni in progresijo elektrofizioloških sprememb ter napredovanje sprememb v avtofluorescenci očesnega ozadja pri slovenskih bolnikih s Stargardtovo distrofijo. Povprečno smo bolnike spremljali 18 let (razpon od 10-26 let).
METODE: Vključenih je bilo 18 genetsko potrjenih bolnikov s STGD1 (5 moških, 13 žensk). Starost ob prvem pregledu je bila 22 let (razpon od 7-46) in pri zadnjem pregledu 40 let (razpon od 17-72). Analizirali smo najboljšo korigirano vidno ostrino (VO) po Snellenu, slikovni ERG (PERG, velika polja) in fotopični in skotopični ERG (SFERG) ter avtofluorescenco očesnega ozadja. Bolniki so bili razvrščeni glede na AF v štiri Fishmanove stopnje in glede na ERG v tri elektroretinografske skupine (skupina 1-makularne spremembe, skupina 2- okvara makule in generalizirana okvara čepnic, skupina 3- okvara makule in generalizirana okvara čepnic in paličnic). Izmerili smo področja definitivno zmanjšane avtofluorescence (DDAF). Bolniki so bili dodatno razdeljeni glede na genotip, primerjali smo fenotip in genotip.
REZULTATI: Mediana letne izgube VO je bila 0,009 na leto (razpon 0,002-0,071), mediana stopnja napredovanja območja DDAF je bila 0,354 (razpon 0,002-4,359) mm2 na leto. Pri 8 od 18 bolnikov (44%) je prišlo do napredovanja ERG, spremembe v FAF smo opazili pri 10 od 18 bolnikov (56%). Pri 2 od 18 bolnikov (11%) je FAF ostala stabilna, prišlo je do napredovanja ERG, pri 4 od 18 (22%) je prišlo do napredovanja FAF, ERG je ostal stabilen, pri 6 od 18 (66%) je prišlo do napredovanja FAF in ERG, pri 6 od 18 (66%) pa sta tako FAF kot ERG ostala stabilna. Pri 66,6 % bolnikov iz ERG skupine 1 smo opazili napredovanje: 33,3 % so napredovali v ERG2 in v 33,3 % v ERG 3. 50 % bolnikov iz skupine ERG 2 je napredovalo v skupino ERG 3. Bolniki, ki so bili nosilci mutacije p.(Gly1961Glu) oz. p.(Asn1868Ile)alel, so imeli značilno počasnejšo stopnjo napredovanja DDAF v primerjavi z bolniki, ki so bili nosilci drugih mutacij (0,07 mm2 v primerjavi z 1,03 mm2), pri njih se je bolezen pojavila bistveno kasneje (v starosti 20 let v primerjavi s 13 leti).
ZAKLJUČKI: Pri spremljanju bolnikov s Stargardtovo distrofijo in svetovanju le-tem glede prognoze in napredovanja bolezni je treba upoštevati strukturne in funkcionalne parametre skupaj z genotipom. Bolniki s hipomorfnimi različicami p.(Gly1961Glu) ali p.(Asn1868Ile) so imeli na splošno blažjo obliko bolezni kot bolniki z drugimi genotipi.

PURPOSE: The study aimed to assess long term natural history of Slovenian Stargardt disease (STGD1) disease patients, inclouding electrophysiological (ERG) and fundus autofluorescence (FAF) progression rate with the median follow-up of 18 years (range 10-26 years).
METHODS: 18 genetically confirmed STGD1 patients (5 male, 13 female) were included. Age at first exam was 22 years (range 7-46), age at last exam 40 years (range 17-72). Snellen best corrected visual acuity (VA), large-field pattern (PERG) and full-field electroretinography (ffERG) and fundus autofluorescence appearance (FAF) were analysed. Patients were classified into four Fishman stages and three electroretinography groups (Group 1-macular involvement, Group 2- macular involvement and generalised cone dysfunction and Group 3- macular involvement and generalised cone and rod dysfunction). Areas of definitely decreased autofluorescence (DDAF) were measured. Patients were further substratified based on genotype and phenotype-genotype corelation was performed.

RESULTS: Median yearly VA loss was 0,009 per year (range 0,002-0.071), the median progression rate of DDAF area was 0.354 (range 0.002-4.359) mm2 per year. 8 out of 18 patients (44%) showed ERG progression, FAF appearance progressed in 10 out of 18 patients (56%). In 2 out of 18 patients (11%) FAF stayed stable and ERG progressed, in 4 out of 18 patients (22%) FAF progressed and ERG stayed stable, in 6 out of 18 patients (33%) both FAF and ERG progressed and in 6 out of 18 patients (33%) both FAF and ERG stayed stable. A total of 66.6% patients from group 1 showed ERG group transition during follow up, with 33.3% progressing to group 2 and 33,3% to group 3. 50% of patients from ERG group 2 progressed to ERG group 3. Patients harbouring p.(Gly1961Glu) or p.(Asn1868Ile)allele had significantly slower DDAF progression rate (0.07mm2 vs. 1.03mm2), when compared to patients with other genotypes, as well as significantly later age of onset (20 years vs.13 years).
CONCLUSIONS: Structural and functional parameters, together with genotype, should be considered when counselling patients regarding prognosis and monitoring Stargardt disease progression. Patients harbouring hypomorphic variants p.(Gly1961Glu) or p.(Asn1868Ile) presented with overall milder disease than patients with other genotypes.

UČINKOVITOST IN VARNOST NOVE SUBRETINALNE GENSKE TERAPIJE ZA USH1C TESTIRANE NA PRAŠIČIH DIVJEGA TIPA

A NEW SUBRETINAL GENE THERAPY FOR USH1C IS WELL TOLERATED IN WILD TYPE PIGS

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PURPOSE: This study aimed to evaluate early-phase safety of subretinal application of AAVanc80.CAG.USH1Ca1 (OT_USH_101) in wild-type (WT) pigs, examining the effects of a vehicle control, low dose, and high dose.
METHODS: Twelve WT pigs (24 eyes) were divided into three groups: four pigs each received bilateral subretinal injections of either vehicle, low dose (3.3 × 10e10 vector genomes [vg] per eye), or high dose (1.0 × 10e11 vg per eye). Total retinal thickness (TRT) was evaluated using optical coherence tomography and retinal function was assessed with full-field electroretinography (ff-ERG) at baseline and two months post-surgery. After necropsy, retinal changes were examined through histopathology, and human USH1C_a1/harmonin expression was assessed by quantitative PCR (qPCR) and Western blotting.
RESULTS: OT_USH_101 led to high USH1C_a1 expression in WT pig retinas without significant TRT changes two months after subretinal injection. The qPCR revealed expression of the human USH1C_a1 transgene delivered by the adeno-associated virus vector. TRT changes were minimal across groups: vehicle (256 ± 21 to 243 ± 18 µm; P = 0.108), low dose (251 ± 32 to 258 ± 30 µm; P = 0.076), and high dose (242 ± 24 to 259 ± 28 µm; P = 0.590). The ff-ERG showed no significant changes in rod or cone responses. Histopathology indicated no severe retinal adverse effects in the vehicle and low dose groups.
CONCLUSIONS: Early-phase clinical imaging, electrophysiology, and histopathological assessments indicated that subretinal administration of OT_USH_101 was well tolerated in the low-dose treatment arm. OT_USH_101 treatment resulted in high expression of human USH1C_a1. Although histopathological changes were not severe, more frequent changes were observed in the high-dose group.

IN MEMORIAM DR MARIJA VOLK

IN MEMORIAM DR MARIJA VOLK

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ODKRITJE PHB1 GENA KOT NOVEGA KANDIDATNEGA GENA ZA OPTIČNO ATROFIJO

DISCOVERY OF PHB1 AS A NOVEL CANDIDATE GENE IN DOMINANT OPTIC ATROPHY

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NAMEN: Dedne optične nevropatije so genetsko raznolika skupina motenj, ki so posledica patogenih različic v mitohondrijskih in jedrnih genih. Čeprav se je diagnostična uspešnost izboljšala, velik delež posameznikov še vedno ostaja nepojasnjen. Ugotovili smo heterozigotno različico v genu PHB1, ki ga poročamo kot nov kandidatni gen za dominantno dedno optično nevropatijo.
METODE: V raziskavo smo vključili tri generacijsko družino s štirimi osebami z diagnosticirano optično nevropatijo in petimi zdravimi člani. Opravili smo sekvenciranje eksoma in analizo vezave z genomskm mapiranjem analize vezave, da bi ugotovili morebiten genetski vzrok. Dodatno smo za ugotavljanje vzročnosti različice v genu PHB1 uporabili in silico proteinsko modeliranje in in vitro eksperimente, da bi pridobili dodatne podporne dokaze.
REZULTATI: Pri vseh štirih prizadetih članih je bila ugotovljena heterozigotna različica c.440C>T (p.Ser147Phe) v genu PHB1, medtem ko jo pri petih zdravih članih družine nismo potrdili. Strukturno modeliranje proteina je pokazalo, da aminokislinska zamenjava p.Ser147Phe v prohibitinu najverjetneje spremeni stabilnost in delovanje proteina verjetno zaradi izgube vodikovih vezi. In vitro eksperimenti, opravljeni v fizioloških pogojih in pogojih oksidativnega stresa, vključno z Western blot analizo proteinov, ki sodelujejo pri mitohondrijski fuziji, so pokazali spremenjeno mitohondrijsko dinamiko, kar je skladno s poročili pri dednih optičnih nevropatijah.
ZAKLJUČEK: Naša raziskava je prvi dokaz, da je PHB1 kandidatni gen pri etiologiji optične atrofije. Potrebne so nadaljnje raziskave za razjasnitev vključenih molekularnih poti in opredelitev vzročne vloge PHB1 pri dednih optičnih nevropatijah oziroma sorodnih boleznih.

PURPOSE: Hereditary optic neuropathies constitute a genetically diverse group of disorders, arising from pathogenic variants in mitochondrial and nuclear genes. While diagnostic yield has improved, a significant proportion of individuals remain undiagnosed. We report on a heterozygous missense variant in the PHB1 gene, which we propose as a novel candidate gene for dominant optic neuropathy.
METHODS: A three-generation family with four individuals affected by optic neuropathy and five unaffected members, was enrolled. Exome sequencing and genome-based linkage mapping were performed to identify possible genetic causes. Protein modelling and in vitro experiments were carried out to provide supporting evidence.
RESULTS: In all four affected members, a heterozygous missense variant c.440C>T (p.Ser147Phe) in the PHB1 gene was identified, while it was absent in five healthy family members. In silico structural modelling predicted that the p.Ser147Phe substitution in the prohibitin most likely disrupts protein stability and function, possibly due to loss of hydrogen bonding. In vitro assays, performed under normal and oxidative stress conditions, including Western blot analysis of proteins involved in mitochondrial fusion, indicated altered mitochondrial dynamics as reported in hereditary optic neuropathies.
CONCLUSION: This study provides the first evidence implicating PHB1 as a candidate gene in the aetiology of optic atrophy. Further research is warranted to clarify the molecular pathways involved and to determine the causal role of PHB1 in hereditary optic neuropathies and related disorders.

INTERAKTIVNA PREDSTAVITEV POSTERJEV

INTERACTIVE PRESENTATION OF POSTERS

KLINIČNA APLIKACIJA IN VIVO KONFOKALNE MIKROSKOPIJE ROŽENICE PRI BOLNIKIH Z NEVROPATIJO TANKIH VLAKEN

CLINICAL APPLICATION OF CORNEAL IN VIVO CONFOCAL MICROSCOPY IN PATIENTS WITH SMALL FIBRE NEUROPATHY

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NAMEN: Uvajanje in vivo konfokalne mikroskopije (IVKM) v klinično rabo pri bolnikih z nevropatijo tankih vlaken (NTV) - periferne nevropatije, ki selektivno prizadane tanka Aδ in C živčna vlakna, ki sestavljajo tudi roženični sub-bazalni pletež.
METODE: Bolniki s simptomi in nevrološkimi znaki NTV, so opravili biopsijo kože po standardiziranem postopku ter oftalmološki pregled z usmerjeno dodatno diagnostiko sprememb očesne površine in roženice: testi solznega filma (Schirmerjev test, razpolovni čas solz - BUT), barvanje očesne površine (Oxford lestvica), občutljivost roženice semikvantitativno, IVKM (HRT3 RCM, Heidelberg Engineering, Heidelberg, Nemčija). Povprečno vrednost dolžine živčnih vlaken (CNFL) smo pridobili z analizo 6 slik sub-bazalnega pleteža s uporabo CCMetrics (University of Manchester). Rezultate smo primerjali z normativno bazo podatkov in jih ovrednotili kot patološke, če so bili pod 5. percentilo za starost in spol.
REZULTATI: 8 bolnikov je ustrezalo vključitvenim kriterijem. 12 izmed 28 bolnikov je imelo pozitiven rezultat biopsije kože – t.j. pomembno znižano gostoto tankih vlaken. Pri 9 izmed 12 bolnikih s pozitivno biopsijo kože, je bila ugotovljena pomembno znižana dolžina roženičnih živčnih vlaken (CNFL). Medtem ko so bile pri 12 izmed 16 z negativno biopsijo kože (normalna gostota tankih vlaken) tudi vrednosti CNFL znotraj normalnih. Iz skupine 12 bolnikov s pozitivno biopsijo kože smo BUT manj kot 5 sekund izmerili pri 75%, vendar tudi pri 64,3% z negativno biopsijo. Schirmer manj kot 5 pri smo izmerili le pri 33,3% s pozitivno biopsijo kože.
ZAKLJUČEK: Za prikaz periferne nevrodegeneracije pri bolnikih s simptomi NTV bi lahko IVKM roženice v prihodnje nadomestila biopsijo kože, saj ima 75% specifičnost in 75% občutljivost. Zaradi neinvaizvnosti in ponovljivosti nam ta metoda omogoča tudi spremljanje zdravljenja nevropatije. Hkrati smo ugotovili, da testi suhega očesa večinoma niso specifični za NTV.

PURPOSE: To evaluate the use of in vivo confocal microscopy (IVCM) in patients with small fibre neuropathy (SFN). SFN is a peripheral neuropathy that selectively affects the small Aδ and C nerve fibres, which comprise the corneal sub-basal plexus.
METHODS: 28 patients with symptoms of SFN underwent a standardized skin biopsy, eye exam with additional ocular surface examination (Schirmer, tears half life-BUT), staining of the eye surface (Oxfords scale), IVCM (HRT3 RCM, Heidelberg Engineering, Heidelberg, Germany). Mean nerve fiber length (CNFL) was obtained by analyzing 6 images of the sub-basal plexus using CCMetrics (University of Manchester). The results were compared with the normative database and evaluated as pathological if they were below the 5th percentile for age and sex.
RESULTS: 28 patients fit the entry criteria. 12 out of 28 patients had a positive skin biopsy result - a significantly reduced density of small nerve fibers. 9 of 12 patients with a positive skin biopsy had significantly reduced corneal nerve fiber length (CNFL). 12 of 16 with a negative biopsy, had CNFL within normal values. In the group of 12 patients with a positive, TBUT less than 5 seconds in 75%, but it was also less than 5 seconds in 64,3% with a negative biopsy. Schirmer was less than 5 in 33.3%.
CONCLUSION: Corneal IVCM could replace skin biopsy as the method of choice in demonstration of peripheral neurodegeneration, since it demonstrated a 75% specificity and sensitivity. Due to its non-invasiveness and reproducibility, this method also allows us to monitor the treatment of neuropathy. At the same time, we found that tests of dry eye are not specific for SFN.

TRAJNOSTNI VIDIKI OPERACIJE KATARAKTE

SUSTAINABILITY ASPECTS OF CATARACT SURGERY

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NAMEN: Izračunati ogljični odtis pri operacijah sive mrene za leto 2024 na Očesni kliniki, Univerzitetnega kliničnega centra (UKC) Ljubljana in predstaviti priporočila Evropskega združenja kataraktnih in refraktivnih kirurgov (ESCRS) za trajnostno operacijsko dvorano.
METODE: Z uporabo orodja SIDICS (angl. Sustainability Index for Disposables in Cataract Surgery) smo izračunali ogljični odtis operacij sive mrene na Očesni kliniki UKC Ljubljana v letu 2024. S pregledom literature smo sestavili priporočila za bolj trajnostno operacijsko dvorano pri operaciji sive mrene.
REZULTATI: V letu 2024 smo na Očesni kliniki UKC Ljubljana glede na izračun z uporabo orodja SIDICS proizvedli 18511,4 kg ogljičnega odtisa, na 1 operacijo katarakte 8,1kg. Z uporabo priporočil ESRCS in sestavljanjem svojega izbranega paketa za operacijo sive mrene (angl. cataract pack) bi lahko letni ogljični odtis več kot prepolovili (zmanjšali za 9586,6 kg). Med konkretne predloge za zmanjšanje ogličnega odtisa sodijo: uporaba manjših operacijskih pokrival za pacienta (100x120cm, namesto 150x240cm), uporaba manjših operacijskih plaščev (L namesto XL), nadomestilo prekrival za naslonjalo za roke in namesto tega prekritje naslonjal za roke z delno razvezanim plaščem ter uporabo manj kanil in brizg.
ZAKLJUČKI: Zdravstvena dejavnost je eden največjih svetovnih onesnaževalcev z emisijami toplogrednih plinov (TGP), ki je leta 2019 prispevala 4,4% vseh globalnih emisij TGP. Operacijske dvorane so odgovorne za približno 70% ogljičnega odtisa zdravstvenega sektorja v Evropi. Operacija sive mrene je ena najpogostejših operativnih posegov. Uvedba trajnostnih priporočil za operacije sive mrene bi lahko pomembno zmanjšala ogljični odtis in pripomogla k trajnostni zdravstveni dejavnosti.

PURPOSE: To calculate the carbon (CO2) footprint of cataract surgeries in 2024 at the Eye Hospital University Medical Centre (UKC) Ljubljana and present the recommendations of the European Society of Cataract and Refractive Surgeons (ESCRS) for a sustainable operating room.
METHODS: Using the SIDICS tool (Sustainability Index for Disposables in Cataract Surgery), we calculated the CO2 footprint of cataract surgeries at the Eye Hospital UKC Ljubljana in 2024. We proposed recommendations for a more sustainable operating room for cataract surgery based on a literature review.
RESULTS: In 2024, the Eye Hospital UKC Ljubljana emitted 18,511.4kgCO2 from cataract surgeries, averaging 8.1 kgCO2 per surgery, based on calculations using the SIDICS tool. By implementing the ESCRS recommendations and assembling a customized cataract pack, the annual CO2 footprint could be reduced by 9,586.6 kgCO2. Specific proposals for reducing CO2 emissions include using smaller surgical drapes for patients (100x120 cm instead of 150x240 cm), opting for smaller surgical gowns (L instead of XL), replacing armrest covers by covering the armrests with the surgical gown, and reducing the number of cannulas and syringes used.
CONCLUSION: Healthcare is among the largest greenhouse gas (GHG) polluters worldwide, accounting for 4.4% of global GHG emissions in 2019. Operating rooms are responsible for approximately 70% of the healthcare CO2 footprint in Europe. As one of the most frequently performed surgical procedures worldwide, cataract surgery presents a key opportunity for sustainability initiatives. Reducing cataract surgery waste could substantially reduce its CO_2 footprint and contribute to a more sustainable healthcare system.

TAVMATSKA KATARAKTA – SERIJA KLINIČNIH PRIMEROV

TRAUMATIC CATARACT – A CASE SERIES

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NAMEN: Sekundarni kirurški prisotp k travmatski katarakti pri seriji bolnikov s penetrantno poškodbo zrkla in poškodbo sprednje lečne ovojnice.
METODE: Prospektivno sledenje na oddelku po primarni oskrbi, predoperativna priprava, poseg, pooperativno spremljanje.
REZULTATI: 6 oči, 6 bolnikov, strosti 17-46 let (povprečno 28.6,SD 12.81), po poškodbi, ki je zajemala roženico in sprednjo lečno ovojnico. Primarna oskrba je bila narejena v 4-12 urah: pri 5/6 očeh šivanje roženične rane, 1/6 fibrinsko lepilo, vsi Vancomycin intrakameralno. Pooperativno so vsi prejemali sistemsko Ceftazidim 7 dni, glavne težave so bile nabrekanje leče (2 očesi), skaljena leča (5 oči), visok IOP (1 oko), prolaps lečnih mas (1 oko). Sekundarna operacija katarakte je bila narejena 2-7 dni po primarni oskrbi, v 1 primeru ni bila potrebna.
TEHNIKE PRI POSEGU: intraoperativna midriaza, barvanje lečne ovojnice, uporaba kohezivnih viskoelastikov, rezanje sprednje lečne ovojnice, suha aspiracija lečnih mas, implantacija IOL (4/5 oči), IOL je bila izračunana na osnovi optične biometrije in podatkov iz drugega očesa. Po 1 mesecu je bila vidna ostrina od prsti na 1 m do 0,7 p, pri bolniku, ki ni potreboval operacije katarakte pa 1.0.
ZAKLJUČKI: Poškodba sprednje lečne ovojnice pogosto (ne pa vedno) vodi do hitrega nastanka travmatske katarakte, ki oteži potek odprte poškodbe očesa. Sekundarna operacija katarakte, ki je bila v seriji narejena po 2-7 dneh, z implantacijo IOL v 80 %, je bila uspešna. Odprto poškodbo zrkla s poškodbo leče opredelimo kot težko, potrebnih je več posegov ter primerno vodenje bolnika s preventivo endoftalmitisa in obvadovanjem zapletov.

PURPOSE: Secondary surgical approach to traumatic cataract in a case series of open globe injury and anterior lens capsule tear.
METHODS: Prospective follow-up of patients after primary surgery at the hospital department, secondary procedure, and postoperative management.
RESULTS: 6 eyes, 6 patients, aged 17–46 years (mean 28.6, SD 12.8), suffered an open globe trauma with cornea and anterior lens capsule injury. Primary care was performed within 4-12 hours and included: corneal suturing 5/6 eyes, fibrin glue 1/6 , intracameral vancomycin 6/6; and was followed by i.v. ceftazidime, 7 days. The main postoperative issues were swelling (2 eyes) or clouded lens (5 eyes), high IOP (1 eye), prolapse of lens material (1 eye). Secondary cataract surgery was performed 2-7 days later; in 1 case, it was not needed.
THE TECHNIQUES USED: intraoperative mydriasis, anterior lens capsule staining, cohesive viscoelastics, lens capsule cutting, dry aspiration of lens material, IOL implantation (4/5 eyes) IOL was calculated based on optical biometry and fellow eye data. At 1 month follow-up, the visual acuity ranged from FC to 0.7; patient who did not develop cataract 1.0.
CONCLUSIONS: Anterior lens capsule injury often (not always) leads to rapid development of traumatic cataract, which complicates the open eye injury. Secondary cataract surgery, which was performed in 2–7 days in the presented series, with IOL implantation possible in 80%, was sucessful. An open globe injury involving the lens is defined as severe, multiple procedures and proper patient management with endophthalmitis prevention are necessary to restore vision.

NOVOSTI PRI ZDRAVLJENJU KERATITISA ZARADI OKUŽBE Z ACHANTMOEBAO

ADVANCES IN THE TREATMENT OF ACANTHAMOEBA KERATITIS

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NAMEN: Primerjava klasičnega z novim protokolom zdravljenja keratitisa z Achantamoebao.
METODE: Predstavitev dveh kliničnih primerov z ugodnim izhodom, obravnavanih po dveh različnih protokolih.
REZULTATI: Za postavitev diagnoze je potrebna ustrezna klinična slika, mikrobiološka potrditev s kulturo ali PCR in/ali prikaz cist z In vivo konfoklano mirkoskopijo (IVKM). Klasični protokol je 0,02% PHMB in 0,02% klorheksidin v odmerkih na 1 uro do stabilizacije. Uporaba kortikosteroidov je najverjetneje koristna. Nedavna literatura navaja nov protokol z monoterapijo 0,08% PHMB v odmerku na 1 uro do stabilizacije. Primer 1: 28-letna bolnica s stromalnim keratitisom na desnem očesu, ki je imela simptome, trajajoče 2 tedna, in je bila zdravljena tudi s kortikosteroidi. Izhodiščna vidna ostrina je bila štetje prstov. Okužba je bila potrjena s kulturo in IVKM. Začetno zdravljenje po klasičnem protokolu je vključevalo 0,02% PHMB in 0,02% klorheksidin na 1 uro. Po stabilizaciji stanja je prejemala propamidin. Skupno trajanje zdravljenja je bilo 1 leto, brez ponovitev. Končna vidna ostrina je bila 1,0. Primer 2: 46-letna gospa s stromalnim keratitisom na desnem očesu, ki je imela simptome, trajajoče 2 tedna, in je bila zdravljena tudi s kortikosteroidi. Izhodiščna vidna ostrina je bila 0,2. Okužba je bila dokazana s kulturo in potrjena z IVKM. Zdravljena je bila po novem protokolu z monoterpijo 0,08% PHMB na 1 uro. Začetni odmerek je bil postopoma znižan na vzdrževalni odmerek. Vidna ostrina po 2 mesecih je bila 1,0, brez ponovitev.
ZAKLJUČEK: Z novim protokolom dosežemo hiter odgovor in povrnitev vidne ostrine in je primerljiv s klasičnim. Ne glede na protokol je uporaba topičnih kortikosteroidov kontradiktorna, saj lahko povzročijo ponovni zagon in se jim zato izogibamo. Na končni rezultat pomembno vpliva začetni stadij bolezni, zato je zgodnja diagnostika z mikrobiološkimi preiskavami in IVKM ključna.

PURPOSE: To compare the conventional and new treatment protocols for Acanthamoeba keratitis.
METHODS: Two clinical cases with favorable outcomes, each treated based on a different protocol.
RESULTS: Confiramtion of Acanthamoeba is based on recognition of clinical picture, microbiological cultures or PCR, and/or In vivo confocal microscopy (IVCM). The conventional protocol consists of 0.02% PHMB and/or 0.02% clorhexidine, administered hourly until stabilization. Corticosteroids are considered potentially beneficial. More recently, a new protocol emerged using 0.08% PHMB as monotherapy, also administered hourly until stabillization. Case 1: A 28-year-old female with stromal keratitis in the right eye presented with symptoms lasting for 2 weeks and was also treated with corticosteroids. The initial visual acuity was counting fingers. The infection was confirmed through culture growth and IVCM. Initial treatment following the conventional protocol included 0.02% PHMB and 0.02% clorhexidine administered hourly. After stabilization, the regimen was changed to propamidine. The total treatment duration was 1 year, without relapses. Final visual acuity was 1.0. Case 2: A 46-year-old female with stromal keratitis in the right eye presented with symptoms lasting for 2 weeks and was also treated with corticosteroids. The initial visual acuity was 0.2. The infection was confirmed through culture growth and verified with IVCM. She was treated according to the new protocol with 0.08% PHMB monotherapy, administered hourly. The initial dose was gradually tapered to a maintenance dose. Her visual acuity was 1.0 after 2 motnhs, without relapses.
CONCLUSION: With the new protocol, we achieve a rapid response and recovery of visual acuity, and it is comparable to the conventional one. Regardless of the protocol, the use of topical corticosteroids is controversial, as they may trigger a recurrence and should therefore be avoided. The final outcome depends on the initial stage of the disease, so early diagnosis with microbiological tests and IVCM is cruical.

KONTAKTNA LEČA V VLOGI UMETNE ROŽENICE

CONTACT LENS IN THE ROLE OF AN ARTIFICIAL CORNEA

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NAMEN: Predstaviti primer 50-letne bolnice z izrazito keratomalacijo in delno insuficienco limbalnih matičnih celic (LSCD) po enem letu neprekinjene nošnje terapevtske kontaktne leče (TKL) po zdravljenju keratitisa, povzročenega z virusom Varicella-Zoster (VZV).
PREDSTAVITEV PRIMERA: 50-letna bolnica po predhodni herpetični okužbi leve roženice, zdravljeni v tujini, je bila napotena zaradi izrazitega in obsežnega stanjšanja roženice. Gospa je imela že eno leto vstavljeno TKL, ki je ni menjala. Bolečin ali poslabšanja vida ni opažala. Ob prvem pregledu smo beležili vidno ostrino (VA) levo 0,1 (Snellen), TKL je bila prilepljena na roženico, pod njo so bili gosti belkasti depoziti, oko je bilo rahlo draženo, vidna je bila centralna descemetokela premera 4-5mm ter periferna vaskularizacija roženice (NV) 360°. Drugo oko je bilo zdravo, solzni film normalen in stabilen. Na OCT roženice je bilo razvidno, da je descemetokela epitelizirana. Zaradi tveganja za perforacijo TKL ni bila odstranjena, uvedena je bila topikalna antibiotična in vlažilna terapija ter sistemski virostatik v terapevtskem odmerku ter predvidena presaditev roženice, ko se vnetje umiri. Po enem tednu terapije je TKL izpadla, descemetokela se je močno izbočila, zato je bila roženica krita z amnijsko membrano in 6 dni kasneje narejena terapevtska tektonska penetrantna keratoplastika (PKP). Iz lastne izrezane roženice je bil s PCR potrjen VZV. Dva tedna po posegu je bil ugotovljen cistoidni makularni edem, ki je ob topikalni terapiji izzvenel. Zaradi delne LSCD je imela 2 meseca po PKP terapijo z avtologni serumskimi kapljicami. Ob zadnjem pregledu 3 leta po PKP je bila VA s korekcijo na očalih 0,4, presadek roženice je bil prozoren in epiteliziran s povsem gladkim epitelom, prišlo je do skoraj popolne regresije NV.
ZAKLJUČEK: TKL, ki je bila 1 leto prilepljena na roženico, je bila poleg herpetične očesne bolezni lahko vzrok obsežne descemetokele, hkrati pa je preprečevala njeno izbočenje. Opažali smo presenetljivo izboljšanje LSCD po PKP ob terapiji z avtologni serumskimi kapljicami ter protivnetni terapiji, kar je pogojevalo funkcionalno uspešno presaditev roženice.

AIM: To present a case of a 50-year-old female patient with severe corneal melting and partial limbal stem cell deficiency (LSCD) after one year of continuous wear of a therapeutic contact lens (TCL) following treatment for keratitis caused by the Varicella-Zoster virus (VZV).
CASE PRESENTATION: A 50-year-old female patient, previously treated abroad for a presumed herpetic keratitis, was referred due to significant and extensive corneal thinning of the left eye LE. The patient had been wearing TCL continuously, without removal, for one year. She reported no pain or vision loss. At presentation, the visual acuity (VA) in LE was 0.1 (Snellen), and biomicroscopy revealed white deposits beneath TCL, which was adherent to the corneal surface. The eye was red, and a central descemetocele measuring 4-5mm in diameter, was present, along with peripheral corneal vascularization (NV) 360°. The right eye was unremarkable, exhibiting a normal and stable tear film. Corneal OCT showed that the descemetocele was epithelialized. Due to the risk of perforation, the TCL was not removed; instead, topical antibiotic and lubricating therapies were initiated, along with a therapeutic dose of systemic antiviral therapy. A penetrating keratoplasty (PKP) was planned to be performed once the inflammation had subsided. One week following initiation of therapy, the TCL dislodged, and the descemetocele protruded significantly. The patient underwent an amniotic membrane transplantation, and six days later, a therapeutic tectonic penetrating keratoplasty (PKP) was performed. VZV was confirmed by PCR of the excised corneal tissue. Two weeks postoperatively, cystoid macular edema was detected and successfully treated with topical medications. Due to partial LSCD, the patient received autologous serum eye drops for two months following PKP. At the final follow-up, three years post-PKP, VA was 0.4 with glasses, the corneal graft was clear with a smooth epithelium, and there was near-complete regression of corneal NV.
CONCLUSION: In this case, the prolonged use of TCL, which adhered to the cornea for one year, may have, in addition to the herpetic ocular disease, contributed to the extensive descemetocele, while also preventing its protrusion. Postoperatively, a surprising improvement in LSCD was observed following treatment with autologous serum eye drops, and anti-inflammatory therapy, resulting in a functionally successful corneal transplant.

PERFORACIJA - FRUSTRACIJA: PRIMER REVMATOLOŠKE PACIENTKE S SPONTANO PERFORACIJO ROŽENICE

PERFORATION - FRUSTRATION: A CASE OF A RHEUMATIC PATIENT WITH SPONTANEOUS CORNEAL PERFORATION

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NAMEN: Prikaz 78-letne pacientke z revmatično polimialgijo s simetričnim seronegativnim revmatoidnim artritisom na terapiji s hidroksiklorokinom in medrolom ter znanimi suhimi očmi, pri kateri je prišlo do spontane perforacije ulkusa roženice. Gospa je tožila o dva tedna trajajočem neprijetnem občutku v levem očesu, kot da jo reže. V treh dneh pred pregledom se je bolečina stopnjevala, motila jo je svetloba in vid je bil meglen. Doma je redno aplicirala umetne solze.
METODE: Opravili smo testiranje vidne ostrine po Snellenu, sprednjo in zadnjo biomikroskopijo, Schirmer test, OCT makul ter osnovne laboratorijske preiskave. Odvzet je bil bris roženice na bakterije. Pregledal jo je revmatolog, ki je predlagal povečanje odmerka sistemskega kortikosteroida. Vstavljena je bila terapevtska kontaktna leča, ob intenzivnem vlaženju uvedena še topikalna očesna terapija.
REZULTATI: Ob terapiji se je perforacija zaprla, kontaktna leča je bila po sedmih dneh odstranjena. Vidna ostrina brez korekcije se je z 0,2 izboljšala na 0,4. Na kontrolnih pregledih ostaja roženica periferno stanjšana, vendar epitelizirana. OCT makul ni pokazal okvare mrežnice kot posledice uporabe antirevmatikov.
ZAKLJUČEK: Revmatoidni artritis je sistemsko avtoimunsko obolenje, pri katerem gre za vnetje sklepov. Prizadeti so lahko še drugi organi, tudi oči. Najpogosteje gre za suhe oči zaradi zmanjšanega delovanja solzne žleze in vnetja očesne površine. Perforacija roženice je redek, ampak hud zaplet, ki zahteva urgentno obravnavo za preprečitev poslabšanja vida. Terapevtska kontaktna leča spodbuja ponovno epitelizacijo in predstavlja neinvazivni ter učinkovit način zdravljenja manjših perforacij roženice. Sodelovanje med oftalmologi in revmatologi je nujno za optimalno zdravljenje in prevencijo zapletov.

PURPOSE: To present the case of a 78-year-old female patient with polymyalgia rheumatica and symmetric seronegative rheumatoid arthritis, treated with hydroxychloroquine and medrol, who also had known dry eyes and developed a spontaneous corneal ulcer perforation. The patient reported a two-week history of an unpleasant sensation in her left eye, described as a cutting feeling. In the three days prior to examination, the pain intensified, she experienced light sensitivity, and her vision became blurry. She had been regularly using artificial tears at home.
METHODS: We performed Snellen visual acuity testing, anterior and posterior slit-lamp biomicroscopy, Schirmer's test, OCT of the macula, and basic laboratory tests. A corneal swab was taken for bacterial analysis. A rheumatologist examined the patient and recommended an increased dose of systemic corticosteroids. A therapeutic contact lens was placed, and in addition to intensive eye hydration, topical therapy was introduced.
RESULTS: With therapy, the perforation closed, and the contact lens was removed after seven days. Uncorrected visual acuity improved from 0.2 to 0.4. Follow-up examinations showed that the cornea remained peripherally thinned but had re-epithelialized. OCT of the macula did not reveal retinal damage due to the use of antirheumatic medication.
CONCLUSION: Rheumatoid arthritis is a systemic autoimmune disease characterized by joint inflammation. Other organs, including the eyes, can also be affected. The most common ocular manifestation is dry eye syndrome due to reduced tear gland function and inflammation of the ocular surface. Corneal perforation is a rare but serious complication that requires urgent management to prevent vision deterioration. A therapeutic contact lens promotes re-epithelialization and represents a non-invasive and effective treatment for small corneal perforations. Collaboration between ophthalmologists and rheumatologists is essential for optimal treatment and complication prevention.

POBESNELI ZOSTER

ZOSTER GONE WILD

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Namen tega prispevka je opisati primer 64-letnega bolnika s klinično sliko herpes zoster ophthalmicusa (HZO) s pridruženim keratouveitisom, ki je kljub lokalni in peroralni virostatični terapiji po dveh dneh vodil do nastanka levostranske okulomotorne pareze, glavobola in vrtoglavice. Infektologi so na koži trupa opažali pridružen herpetiformni izpuščaj. PCR testiranje likvorja je bilo pozitivno na varicella- zoster virus (VZV), kar je potrdilo serozni meningitis ob diseminirani obliki zostra. Uvedena je bila 14-dnevna parenteralna terapija z aciklovirjem ter 5-dnevna peroralna terapija z metilprednizolonom, sledila je vzdrževalna peroralna virostatična terapija. CT glave je izključil absces. MR glave je prikazala akutno trombozo levega transverzalnega in sigmoidnega sinusa. Testi trombofilije so bili negativni, uvedena je bila antikoagulantna terapija za eno leto. Po treh mesecih zdravljenja je prišlo do popolnega izboljšanja očesne gibljivosti. Po devetih mesecih, ob ustrezni lokalni očesni terapiji, ni bilo več videti znakov aktivnega keratouveitisa. VZV, član družine herpesvirusov, je etiološki povzročitelj noric (varicella) kot primarne okužbe pri otrocih. Virus lahko ostane latenten v živčnem sistemu in se ponovno aktivira, kar povzroči pasovec (herpes zoster) pri odraslih. Herpes zoster se običajno kaže kot vezikularni izpuščaj, ki ga spremljata bolečina in srbenje v predelu lokaliziranega dermatoma. Kadar izpuščaj zajema 1. vejo trigeminalnega živca, se imenuje HZO. Čeprav okužbe z VZV običajno niso smrtno nevarne, lahko pride do zapletov, kot so diseminirana okužba ali meningitis, zlasti pri imunokompromitiranih posameznikih. Klinične manifestacije meningitisa ali meningoencefalitisa običajno vključujejo vročino, glavobol, prizadetost možganskih živcev, draženje mening, slabost, bruhanje in Ramsay-Huntov sindrom. Oftalmologi se v klinični praksi pogosto srečujemo z izoliranim HZO, zato je ključnega pomena, da v primeru atipičnega poteka prepoznamo možne zaplete ter jih ustrezno in pravočasno zdravimo.

This article aims to present the case of a 64-year-old patient with a clinical presentation of herpes zoster ophthalmicus (HZO) with associated keratouveitis, which, despite local and oral antiviral treatment, led to the development of left-sided oculomotor paresis, headache, and dizziness after two days. The infectiologists also observed an associated herpetiform rash on the trunk. PCR testing of cerebrospinal fluid (CSF) confirmed the presence of varicella-zoster virus (VZV), establishing the diagnosis of serous meningitis associated with a disseminated form of herpes zoster. A 14-day parenteral therapy with acyclovir and a 5-day oral course with methylprednisolone was initiated, followed by maintenance oral virostatic therapy. Head CT excluded an abscess, while brain MRI revealed acute thrombosis of the left transverse and sigmoid sinuses. Thrombophilia tests were negative, and anticoagulant therapy was initiated for one year. After three months of treatment, there was a complete improvement in ocular motility. By nine months, with continued appropriate local ocular therapy, there were no signs of active keratouveitis. Varicella-zoster virus (VZV), a member of the herpesvirus family, is the etiological agent of chickenpox (varicella) as a primary infection in children. The virus can remain dormant in the nervous system and reactivate later in life, resulting in shingles (herpes zoster) in adults. Herpes zoster typically manifests as a vesicular rash accompanied by pain and itching localized to a dermatome. When the rash involves the first branch of the trigeminal nerve, it is classified as HZO. Although VZV infections are generally not life-threatening, complications such as disseminated infection or meningitis can occur, especially in immunocompromised individuals. Clinical manifestations of meningitis or meningoencephalitis often include fever, headache, cranial nerve involvement, meningeal irritation, nausea, vomiting, and Ramsay-Hunt syndrome. Ophthalmologists frequently encounter isolated HZO in clinical practice, making it crucial to recognize potential complications in the case of an atypical course and to treat them appropriately and promptly.

PREDSTAVITEV KLINIČNEGA PRIMERA PACIENTA S PRIMARNIM GLAVKOMOM ZAPRTEGA ZAKOTJA IN STANJA PO ZAPORI CENTRALNE MREŽNIČNE ARTERIJE NA LEVEM OČESU TER S PRIMARNIM OŽJIM ZAKOTJEM NA DESNEM OČESU

CLINICAL CASE REPORT OF A PATIENT WITH PRIMARY ANGLE CLOSURE GLAUCOMA AND THE CONDITION AFTER CENTRAL RETINAL ARTERY OCCLUSION IN THE LEFT EYE, AND WITH PRIMARY ANGLE NARROWING IN THE RIGHT EYE

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NAMEN: Predstavitev kliničnega primera 43-letnega pacienta z nenadno nastalim meglenim vidom na levem očesu. Ob prvem pregledu je bil postavljen sum na kombinirano zaporo arterijskega in venskega sistema na levem očesu ob normalnem očesnem pritisku. Tekom nadaljnjih obravnav je bil prisoten povišan očesni pritisk na levem očesu. Ob iskanju vzroka za povišan očesni pritisk je bilo ugotovljeno primarno ožje zakotje obojestransko, kar bi lahko ob skokih očesnega pritiska bil primarni vzrok za nastale spremembe, ki so bile vidne na očesnem ozadju.
METODE: Pregled dokumentacije bolnika.
REZULTATI: Ob prvem pregledu pacienta v urgentni ambulanti je bila korigirana vidna ostrina na levem očesu 0,2 po Snellenu, očesni pritisk je bil v mejah normale. Na očesnem ozadju je bila videti plamenasta krvavitev nad papilo, makula z ishemijo ter zvijugano žilje. Postavljen je bil sum na kombinirano zaporo arterijskega in venskega sistema. Pacient je kasneje opravil fluoresceinsko angiografijo, kjer se je nakazovalo podaljšano polnjenje venul v poznih fazah, žilje je bilo minimalno zvijugano, vidni so bili bloki fluorescence na mestih »bear tracks«, ishemičnih področij ni bilo. Opravljena je bila obsežna slikovna in laboratorijska diagnostika srčno žilnih dejavnikov tveganja, ki je bila v mejah normale. Pet mesecev za primarnim dogodkom je bil pri pacientu ugotovljen povišan očesni pritisk na levem očesu. Na OCT papil levo so bile stanjšane plasti RNFL, na vidnem polju Octopus G2 top je bil prisoten izpad paracentralno nazalno spodaj. V tem času je bil pacient voden kot suspektni sekundarni glavkom na levem očesu. Devet mesecev po primarnem dogodku je bil na pregledu v glavkomski ambulanti zaradi izključitve neovaskularizacije v zakotju. Ob pregledu sta bila klinično opisana izrazito plitka sprednja prekata, brez NVI, papila vidnega živca levo je bila v celoti ekskavirana. Opravljena je bila laserska iridotomija obojestransko in postavljena diagnoza primarni glavkom zaprtega zakotja.
ZAKLJUČEK: Ob prvem pregledu v ambulanti ni vedno nujno, da so najbolj opazne klinične spremembe v očesnem statusu tudi primarni vzrok težav. Pomembna je temeljita anamneza bolnika in natančen klinični pregled.

PURPOSE: A clinical case report of a 43-year-old patient with suddenly occurring blurry vision in his left eye. At the first examination, combined retinal artery and vein occlussion with normal intraocular pressure was suspected. During subsequent treatment the intraocular pressure in his left eye was elevated. In the process of identifying the cause of the elevated intraocular pressure primary angle narrowing was found bilaterally, which could, together with intraocular pressure spikes, be the primary cause of changes visible in the eye fundus.
METHODS: A review of patient's medical records.

RESULTS: At the first examination of the patient at the emergency department, visual acuity in the left eye was corrected by 0.2 using a Snellen chart, and the intraocular pressure was within normal limits. In the eye fundus, disc haemorrhages above the optic nerve head, white swollen retina and tortuous veins were visible. Combined retinal artery and vein occlussion was suspected. Later, fluorescein angiography was performed, which suggested prolonged filling of venules in the later stages, veins were minimally tortuous, fluorescence blocks were visible on "bear tracks", there were no ischemic areas. Thorough imaging and laboratory diagnostics of cardio-vascular risk factors were performed, and they were within normal limits. Five months after the primary event, the elevated intraocular pressure in patient's left eye was found. The OCT of the left optic disc showed retinal nerve fibre layer thinning, and defects paracentral nasal inferior in visual field Octopus G2 top. During this time, secondary glaucoma in the left eye was suspected. Nine months after the primary event, the patient was examined in a glaucoma outpatient clinic to exclude angle neovascularization. In the examination, markedly shallow anterior chambers, without NVI, were clinically reported, and the optic nerve head in the left eye was fully excavated. Laser iridotomy was performed bilaterally and a diagnosis of primary angle closure glaucoma was made.
CONCLUSION: At the first examination in an outpatient clinic, the most visible clinical changes in the eye status are not necessarily always the primary cause of problems. A thorough medical history of a patient and a precise clinical examination are important.

KLINIČNE ZNAČILNOSTI MELANOCITNIH NEVUSOV VEZNICE PRI OTROCIH

CLINICAL FEATURES OF MELANOCYTIC NEVI OF THE CONJUNCTIVA IN CHILDREN

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****Deljeno prvo avtorstvo***

UVOD: Melanocitni nevusi veznice (MNV) so pogosti pri otrocih in najstnikih. Oftalmologi se odločijo za njihovo odstranitev, kljub temu da so večinoma benigni. Odločitev za izrez MNV je odvisna od simptomov (občutek peska v očesu, solzenje) in kliničnih znakov (pigmentna lezija veznice, ki raste in se veča, rdeče oko), kar moti tako otroke kot njihove starše. Parametre za ugotavljanje suspektnosti (ciste in neenakomernost pigmentacije, vnetje, slabo omejen rob) MNV lahko do neke mere ocenjujemo tudi s pomočjo povečane fotografije.
NAMEN: V naši raziskavi smo želeli ugotoviti, kateri parametri so pomembni pri ocenjevanju suspektnosti MNV in predstavljajo indikacijo za morebitno kirurško odstranitev.
METODE: 30 zdravnikov, specializantov in specialistov oftalmologije, je izpolnilo vprašalnike na podlagi slikovnih primerov 30 MNV iz slikovne baze Očesne klinike. Ocenjevali so prisotnost cist, pigmentacije, vnetja in omejenost MNV. Dodatno so ocenili enakomernost pigmentacije in temnejše predele. Podali so mnenje glede suspektnosti lezije in morebitne kirurške odstranitve. Rezultate smo predstavili za vsak slikovni primer in posamezen parameter. Vse parametre smo izrazili v odstotkih, pri čemer smo uporabili povprečno vrednost ocen vseh ocenjevalcev. Za razvrstitev nevusov v dve enako veliki skupini smo uporabili parameter suspektnost. Vrednosti v odstotkih smo razvrstili od najnižje do najvišje ter jih razdelili v skupino, kjer prevladujejo nesuspekti in skupino, kjer prevladujejo suspektni MNV. Skupini smo med seboj primerjali s t-testom in podano vrednostjo p.
REZULTATI: V prvi skupini 15 slik MNV, so jih ocenjevalci v povprečju v 46,7% ocenili kot nesuspektne (p=0) in v povprečju v 79,6% niso svetovali odstranitve (p=0). V drugi skupini preostalih 15 slik MNV, so jih ocenjevalci v povprečju v 59,73% ocenili kot suspektne (p=0) in v povprečju v 57,9% svetovali odstranitev (p=0). Opazovana parametra suspektnost in svetovanje izreza sta bila med obema skupinama MNV statistično pomembno različna. Med šestimi opazovanimi parametri smo statistično pomembno razliko med obema skupinama dokazali samo za izrazitost pigmentacije (blaga za prvo skupino; p=0,023, izrazita za drugo skupino; p=0,00) in temnejše predele pigmentacije (odsotne za prvo skupino; p=0,027, prisotne za drugo skupino p= 0,027). Za vse ostale parametre (ciste, vnetje in rob lezije) statistično pomembne razlike med skupinama nismo dokazali.
ZAKLJUČEK: V naši raziskavi smo potrdili statistično pomembnost za dva od šestih opazovanih parametrov za ugotavljanje suspektnih MNV. To sta neenakomernost pigmentacije in temnejši predeli. Ugotovitev nas napeljuje na uporabo diagnostičnih metod za natančnejše opazovanje MNV in izdelavo boljših diagnostičnih kriterijev.

INTRODUCTION: Melanocytic nevi of the conjunctiva (MNC) are common in children and adolescents. Ophthalmologists often decide to remove them even though they are mostly benign. The decision to remove MNC depends on symptoms (such as a sensation of sand in the eye and lacrimation) and clinical signs (pigmented conjunctival lesions, red eye), which can affect both children and their parents. Parameters used to assess the suspicious nature of MNC (cysts, uneven pigmentation within the nevi, inflammation, margins of the nevi) can also be assessed by magnified photographic images.
PURPOSE: In our study, we wanted to find out which parameters are important to assess the suspicion of MNC and the possibility of surgical removal.

METHODS: Thirty ophthalmologists, including specialists and residents, completed questionnaires based on magnified photographic images of 30 MNC. They evaluated the presence of cysts, pigmentation, inflammation, and the border of the MNC. Additionally, they assessed the uniformity of pigmentation and darker areas. Finally, they provided an opinion regarding the suspected nature of the lesions and the need for surgical removal. The results were expressed for each MNC photography and each parameter individually in percentages. The 30 cases were ranked according to the suspicion of MNC and divided into two equally sized groups. The groups were compared using a t-test, with the p-value provided.
RESULTS: In the first group of 15 MNC photographs, nevi were on average classified as non-suspicious in 46.7% (p=0), removal was recommended in 79.6% (p=0). In the second group of 15 MNC photographs, nevi were on average classified as suspicious in 59.73% (p=0) and removal was recommended in 57.9% (p=0). The parameters of suspicion and recommendations for excision were statistically significantly different between the two groups. Among the six observed parameters, a statistically significant difference between the two groups was found only for the intensity of pigmentation (mild in the first group, p=0.023; intense in the second group, p=0.00) and the presence of darker pigmentation within the lesion (absent in the first group, p=0.027; present in the second group, p=0.027). No statistically significant differences were found for the other parameters (cysts, inflammation, and lesion margins).
CONCLUSION: Our study confirmed the statistical significance of two out of six observed parameters in identifying suspicious MNC: uneven pigmentation and darker areas. This finding prompts us to consider the use of diagnostic methods for more accurate observation of MNC and the development of better diagnostic criteria. *These authors contributed equally to this work.

KIRURŠKO ZDRAVLJENJE RECIDIVANTNEGA LENTIGO MALIGNEGA MELANOMA SPODNJE VEKE

SURGICAL TREATMENT OF RECURRENT LENTIGO MALIGNA MELANOMA OF THE LOWER EYELID

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NAMEN: Prikaz kliničnega primera kirurške obravnave pacientke z recidivantnim lentigo malignim melanomom spodnje veke.
METODE: Retrogradna analiza primera pacientke s ponavljajočim malignim melanomom spodnje veke, pri kateri je bila najprej opravljena ekscizija spremembe v zdravo, rekonstrukcija z Langenbeckovim režnjem in transplantacija prostega kožnega presadka; po recidivu melanoma pa je bila opravljena ekscizija spremembe v zdravo, rekonstrukcija s Hughesovim režnjem ter transplantacijo prostega kožnega presadka.
OPIS PRIMERA: 86 letna pacientka z diagnosticiranim lentigo malignim melanomom spodnje veke, je bila naprej obravnava s strani plastičnih kirurgov. Takrat je bila opravljena ekscizija spremembe, histološko potrjeno v zdravo ter rekonstrukcija z Y režnjem. Po 4 letih je prišlo do recidiva, od takrat naprej je vodena na Očesnem oddelku UKC Mb. Najprej je bila pri gospe izrezana samo sprednja lamela veke, z uporabo zmrzlega reza, za potrditev varnostnih robov, zadnja lamela pa je ostala ohranjena. Defekt smo rekonstruirali z Langenbeckovim kožnim režnjem z lateralne strani obraza in s prostim kožnim presadkom za prekritje tarzalnega dela. Eno leto po uspešni rekonstrukciji ponoven pojav recidiva, ki se je razširil na Meibomove žleze. Tokrat je bil opravljen radikalen izrez celotne veke s širokim varnostnim robom, sledila je zahtevnejša rekonstrukcija s Hughesovim režnjem iz zgornje veke. Gre za dvofazni postopek, kjer se omenjen reženj v drugi fazi prekine. Pri pacientki je bila nato čez eno leto opravljena korekcija blagega medialnega ektropija spodnje veke.
ZAKLJUČEK: Po večmesečnem okrevanju ima pacientka dobro funkcionalno in zadovoljivo estetsko stanje veke. Po enem letu sledenja ni znakov ponovnega recidiva. V celoti je ohranjena očesna površina in vidna ostrina. Predstavljen primer prikazuje kompleksnost zdravljenja malignega melanoma vek. Kljub dejstvu, da so vsi histološki izvidi izrezanih sprememb govorili, da gre za izrez v zdravo, se lahko bolezen na istem mestu ponovi. Potrebno je redno spremljanje. Na opisanem primeru smo pokazali, da lahko kompleksnemu kirurškemu posegu sledi še kompleksnejši poseg na istem mestu. Uporaba primernega režnja omogoča dober funkcionalni rezultat. Gre za občutljivo področje telesa, kjer je potreben individualen pristop, saj sta tako funkcija veke kot zaščita očesa enako pomembni kot popolna odstranitev tumorja.

PURPOSE: Presentation of the clinical case of surgical treatment of a patient with recurrent lentigo malignant melanoma of the lower eyelid.
METHODS: A retrospective analysis of a patient with recurrent malignant melanoma of the lower eyelid, initially treated with excision of the lesion with healthy margins, reconstruction with a Langenbeck flap, and free skin graft transplantation; after the melanoma recurrence, excision of the lesion with healthy margins, reconstruction with a Hughes flap, and free skin graft transplantation were performed.
CASE DESCRIPTION: An 86-year-old female patient diagnosed with lentigo malignant melanoma of the lower eyelid was first treated by plastic surgeons. At the time, the lesion was excised with healthy margins and reconstruction was performed with a Y-flap. Four years later, a recurrence occurred, and the patient was referred to the Ophthalmology Department at the UKC Mb. Initially, only the anterior lamella of the eyelid was excised using frozen section for margin confirmation, and the posterior lamella was preserved. The defect was reconstructed with a Langenbeck skin flap from the lateral side of the face and a free skin graft was used. One year after the successful reconstruction, the melanoma recurred again, this time extending to the Meibomian glands.

A radical excision of the entire eyelid with wide safety margins was performed, followed by a more complex reconstruction with a Hughes flap from the upper eyelid. This is a two-phase procedure, where the flap is severed in the second phase. One year later, the patient underwent correction of mild medial ectropion of the lower eyelid.

CONCLUSION: After several months of recovery, the patient has a good functional and aesthetic outcome of the eyelid. One year follow-up showed no signs of recurrence. The ocular surface and visual acuity are fully preserved. This case demonstrates the complexity of treating malignant melanoma of the eyelids. Despite the fact that all histological findings of the excised lesions showed clear margins, the disease can recur at the same site. Regular monitoring is essential. With this case, we demonstrated that a more complex surgical procedure at the same site can follow initial surgery when an appropriate flap is used, leading to a good functional result. This is a sensitive area of the body where an individualized approach is necessary, as both the function of the eyelid and the protection of the eye are as important as complete tumor removal.

USPEŠNOST KIRURŠKE KOREKCIJE PRIROJENE PTOZE ZGORNJE VEKE Z UPORABO TEHNIKE REŽNJA ČELNE MIŠICE: PRIKAZ PRIMERA

SURGICAL SUCCESS OF CONGENITAL PTOSIS CORRECTION USING FRONTALIS MUSCLE FLAP: A CASE REPORT

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NAMEN: Oceniti uspeh kirurške korekcije enostranske prirojene ptoze zgornje veke z uporabo tehnike režnja čelne mišice in analizirati pooperativne funkcionalne rezultate in vpliv zdravljenja na vidno ostrino.
PRIKAZ PRIMERA: 1 leto in 7 mesecev stara deklica s Turnerjevim sindromom je bila obravnavana zaradi hude enostranske prirojene ptoze zgornje veke, ki je zakrivala vidno os desnega očesa (OD). Predoperativna vidna ostrina (VA) je bila ocenjena s testom preferenčnega pogleda (PLT), pri čemer je bila ocena za OD nezanesljiva, medtem ko je bila VA za levo oko ocenjena na 6/90. Ugotovljena je bila delno omejena abdukcija in občasen odklon OD navzgor. Funkcija mišice dvigovalke zgornje veke je bila močno oslabljena, pacientka je veko lahko dvignila le za 1 mm. Zaradi visokega tveganja za razvoj hude slabovidnosti je bila pri pacientki v splošni anesteziji uspešno izvedena kirurška korekcija ptoze veke z uporabo tehnike režnja čelne mišice. Po operaciji je prejemala terapijo z umetnimi solzami in antibiotičnim mazilom in izvajala okluzijsko terapijo za spodbujanje vidnega razvoja OD.
REZULTATI: Ob zadnjem kontrolnem pregledu 8 mesecev po posegu je dvig desne zgornje veke stabilen, z minimalnim zaostankom veke pri pogledu navzdol. Gibljivost zrkel ni omejena in odklon OD navzgor ni več prisoten. Vidna os OD je prosta, pooperativna VA, ocenjena s PLT, pa znaša 6/30, kar kaže na sprostitev vidne osi, kar pomeni zmanjšano tveganje za napredovanje slabovidnosti. Na roženici ni znakov izpostavitvene keratopatije.
ZAKLJUČEK: Pri pacientki z izrazito enostransko prirojeno povešenostjo desne zgornje veke je bila z uporabo kirurške tehnike režnja čelne mišice dosežena učinkovita in trajna elevacija veke. Poseg je omogočil sprostitev vidne osi in zmanjšal tveganje za napredovanje slabovidnosti OD. Omenjena kirurška tehnika se je izkazala kot učinkovita izbira za zdravljenje izrazite prirojene povešenosti zgornje veke, saj omogoča stabilne funkcionalne in estetske rezultate. Pooperativno spremljanje je bistveno za preprečevanje ekspozicijske keratopatije, medtem ko je dolgoročno preprečevanje in zdravljenje slabovidnosti ključnega pomena za razvoj maksimalnega vidnega potenciala deklice.

PURPOSE: To evaluate the surgical success of congenital ptosis correction using the frontalis muscle flap technique and assess post-operative functional and visual outcomes.
CASE REPORT: A 1-year and 7-month-old girl with Turner syndrome presented with severe unilateral congenital ptosis, obstructing her visual axis in the right eye (OD). Preoperative visual acuity (VA) was evaluated using the Preferential Looking Test (PLT), revealing unreliable results in OD and 6/90 in the left eye. Ocular motility assessment revealed partially restricted abduction and occasional upward deviation of OD. Levator muscle function was severely impaired, with an excursion of approximately 1 mm. Given the high amblyogenic risk, the patient underwent successful surgical ptosis correction using the frontalis muscle flap technique under general anesthesia. Postoperatively, the patient was treated with lubricating drops, antibiotic ointment, and occlusion therapy to support visual development of OD.
RESULTS: At the last (8 month) follow-up visit, the patient demonstrated stable lid elevation, with improved ocular alignment but unilateral moderate lid lag. Postoperative VA using the PLT was recorded as 6/30 OD, indicating better visual axis exposure and a reduced risk of amblyopia progression. Postoperative ocular motility assessment

showed no evidence of restriction or strabismus. Corneal integrity remained intact, with no evidence of exposure keratopathy.

CONCLUSION: In this clinical case, severe unilateral ptosis correction using the frontalis muscle flap technique achieved effective and lasting lid elevation, restoring the visual axis and mitigating amblyogenic risks. This approach demonstrates reliability in managing severe congenital ptosis, ensuring good functional and aesthetic results. Long-term follow-up is essential to monitor for and prevent exposure keratopathy and ongoing amblyopia treatment remains crucial for optimizing her visual outcomes.

KLINIČNI PRIMER: PRIROJENA MREŽNIČNA MAKROŽILA

CASE REPORT: CONGENITAL RETINAL MACROVESSEL

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Prirojene mrežnične makrožile so atipične mrežnične žile, večinoma vene, ki so večje od običajnega mrežničnega žilja in prečkajo horizontalno sredinsko linijo v področju makule. Gre za redke prirojene nepravilnosti s prevalenco 1/200 000. Natančni mehanizmi nastanka niso poznani, najverjetneje gre za kombinacijo genetske predispozicije in nepravilnega embrionalnega razvoja žilja. Čeprav veljajo za benigno spremembo, lahko povzročajo motnje vida in zaplete kot so makularni edem, okluzija mrežnične vene in retinalne krvavitve. Pri 30–letnem moškem, ki je bil obravnavan na očesni kliniki zaradi kontuzijske poškodbe, je bilo ob pregledu levega očesnega ozadja videti anomalno žilje. Opravljena je bila širša očesna slikovna diagnostika, ki je pokazala številne anastomoze med arteriolami zgornjega in spodnjega temporalnega žilnega loka in vejami širše venule, izhajajoče iz spodnje temporalne veje centralne mrežnične vene. Gospod z vidom ni imel nobenih težav. Tudi sicer je zdrav. Za izključitev morebitnih podobnih sprememb v možganih je bil gospod napoten na MRA možganskega žilja, ki je pokazala aplazijo distalnega dela leve vertebralne arterije, patoloških sprememb v smislu anevrizme ali arteriovenske malformacije možganskega žilja pa ni bilo opaziti. Zaradi asimptomatske prezentacije in odsotnosti patoloških žilnih sprememb v možganih dodatna diagnostika in ukrepi niso bili potrebni.

Congenital retinal macrovessels are aberrant vessels, typically veins larger than the usual size, crossing the horizontal raphe in the macular region. They are a rare congenital condition with a prevalence of 1/200 000. While the exact etiological mechanisms remain unclear, a combination of genetic predisposition and abnormal embryonic development of the vasculature is most probable. Although congenital retinal vascular anomalies are considered a benign condition, they can cause visual disturbances and complications such as macular oedema, retinal vein occlusion and retinal haemorrhages. In the case of a 30-year-old man, an anomalous retinal vessel was found on examination of the left ocular fundus during the evaluation of contusional injury. Imaging diagnostics was performed, showing multiple anastomoses between the arterioles of the superior and inferior temporal vascular arches and the branches of the greater venule arising from the inferior temporal branch of the central retinal vein. The patient had no visual problems and was otherwise in good health. To exclude possible similar changes in the brain, the patient was referred for a cerebral MRA, which showed aplasia of the distal part of the left vertebral artery, while no pathological changes in the sense of aneurysms or arteriovenous malformations of the cerebral vasculature were observed. Due to the asymptomatic presentation and the absence of pathologic vascular changes in the brain, no further diagnostic or treatment measures were necessary.

IZGUBLJENI V MEGLICI – POPPERS MAKULOPATIJA; S HLAPNIMI NITRITI POVZROČENA TOKSIČNA MAKULOPATIJA

LOST IN THE MIST – POPPERS MACULOPATHY; TOXIC MACULOPATHY INDUCED BY VOLATILE NITRITES

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NAMEN: Predstaviti primera dveh pacientov, ki sta ob tvegani uporabi hlapnih nitritov (poppersov) razvila toksično makulopatijo.
METODE: Pri obeh pacientih smo poleg kliničnega pregleda opravili obširno slikovno diagnostiko, preiskave vidnega polja in elektrofiziološke preiskave.
REZULTATI: Ob kliničnem pregledu smo pri obeh pacientih v obeh foveah videli drobno rumenkasto liso. Prvi pacient je imel simptome v povezavi s toksično makulopatijo, pri drugem pa je bila toksična makulopatija ugotovljena naključno ob diagnostičnih preiskavah zaradi zapore veje centralne retinalne vene na enem očesu. OCT preiskava je pri obeh pacientih v fovei pokazala tipične simetrične spremembe: hiperreflektivnost s prekinitvijo elipsoidne cone. Elektrofiziološke preiskave so pri obeh pacientih pokazale okvaro čepnic. Pri prvem pacientu je ob abstinenci prišlo do morfološkega in funkcionalnega izboljšanja, ki mu je ob relapsu sledilo poslabšanje, ob ponovni abstinenci pa ponovno izboljšanje tako funkcionalno kot morfološko, kar smo potrdili z OCT in elektrofiziološkimi preiskavami. Pri drugem pacientu kljub svetovani abstinenci ni prišlo do izboljšanja stanja, najverjetneje zaradi dolgotrajne izpostavljenosti toksični substanci in nezanesljivi anamnezi abstinence.
ZAKLJUČEK: Tvegana uporaba hlapnih nitritov povzroča toksično makulopatijo s tipično klinično sliko. Edina možnost za izboljšanje stanja je abstinenca.

OBJECTIVE: To present two cases of patients who developed toxic maculopathy following the high-risk use of volatile nitrites (poppers).
METHODS: Both patients underwent a comprehensive clinical examination, advanced imaging diagnostics, visual field testing, and electrophysiological assessments.
RESULTS: Clinical examination revealed a small yellowish lesion in the fovea of both eyes in both patients. The first patient exhibited symptoms consistent with toxic maculopathy, whereas in the second patient, toxic maculopathy was incidentally diagnosed during diagnostic evaluations for a branch retinal vein occlusion in one eye. Optical coherence tomography (OCT) in both cases demonstrated characteristic symmetrical changes in the fovea, including hyperreflectivity with disruption of the ellipsoid zone. Electrophysiological assessments confirmed cone dysfunction in both patients. In the first patient, morphological and functional improvement was observed following abstinence; however, a relapse led to deterioration, which subsequently improved again with renewed abstinence, as confirmed by OCT and electrophysiological testing. In contrast, the second patient did not show any improvement despite being advised to abstain, likely due to prolonged exposure to the toxic substance and an unreliable history of abstinence.
CONCLUSION: The high-risk use of volatile nitrites can lead to toxic maculopathy with a characteristic clinical presentation. Abstinence is the only effective approach for potential recovery.

BILATERALNI PANSKLERITIS PRI BOLNIKU Z RELAPSIRAJOČIM POLIHONDRITISOM IN VEXAS SINDROMOM

BILATERAL PANSCLERITIS IN A PATIENT WITH RELAPSING POLYCHONDRITIS AND VEXAS SYNDROME

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Namen predstavitve je prikazati primer bolnika z obojestranskim pan skleritisom, relapsirajočim polihondritisom in motnjami srčnega ritma, pri katerem smo ugotavljali prisotnost redke somatske mutacije v genu UBA1 in na podlagi klinične slike in opravljenih preiskav zaključili, da bolnik ustreza merilom za VEXAS sindrom. Kratica VEXAS pomeni V: vakuole, ki so pogosto vidne v celicah pri biopsijah kostnega mozga, E: E1-ubikvitin aktivirajoči encim, kodiran z genom UBA1, X: Gen UBA1 se nahaja na X kromosomu, A: avtoimuna vnetja, S: somatske in ne podedovane mutacije. 55-letni moški je bil napoten v očesno ambulanto zaradi stopnjujočih se težav s pordelimi in bolečimi očmi in zamegljenim vidom obojestransko. S kliničnim pregledom in ultrazvočno preiskavo smo ugotavljali intenzivno vnetje celotne beločnice, zlasti v posteriorni skleri, s padcem vidne ostrine na obeh očeh. Sočasno je bil pri bolniku potrjen relapsirajoči polihondritis s prizadetostjo srca v smislu intermitentnega atrioventrikularnega bloka II. stopnje in paroksizmalne atrijske fibrilacije. Bolnik je bil najprej zdravljen s pulzi metilprednizolona, kar je hitro izboljšalo vid in umirilo vnetje na obeh očesih, tudi motnje ritma so izzvenele. Ob izboljšanju celotne klinične slike je bila uvedena dolgotrajna per os kortikosteroidna terapija skupaj s ciklofosfamidom. Genetska analiza je potrdila prisotnost redke somatske mutacije v genu UBA1, ki je značilna za VEXAS sindrom. Pri bolniku je bila opravljena tudi biopsija kostnega mozga in pretočna citometrija. Po dodatni konzultaciji s hematologi je bilo na podlagi klinične slike in izvidov uvedeno zdravljenje z baricitinibom, zaviralcem janus kinaze. Po 12 mesecih intenzivnega zdravljenja je vnetje sklere v remisiji, vidna ostrina normalna, splošno stanje bolnika pa je stabilno. S predstavitvijo primera želimo poudariti pomen multidisciplinarnega pristopa pri obravnavi bolnika z redkimi očesnimi vnetji, kot je bilateralni pan skleritis, ob sočasnem pojavu zunaj očesnih težav kot je relapsirajoči polihondritis in kardiovaskularnih zapletih. Sodelovanje med revmatologi, kardiologi in oftalmologi je ključno za pravočasno diagnozo, optimalno imunosupresivno zdravljenje ter preprečevanje trajnih organskih poškodb in izgube vida.

This case presentation aims to discuss a patient with bilateral panscleritis, relapsing polychondritis, and heart arrhythmias, in whom a rare somatic mutation in the UBA1 gene was identified. Based on the clinical presentation and diagnostic investigations, the patient met the criteria for VEXAS syndrome. The acronym VEXAS refers to V: vacuoles, often seen in bone marrow biopsy cells, E: E1-ubiquitin-activating enzyme, encoded by the UBA1 gene, X: the UBA1 gene is located on the X chromosome, A: autoimmune inflammation, and S: somatic, non-inherited mutations. A 55-year-old male was referred to the ophthalmology clinic due to worsening symptoms of bilateral red, painful eyes, and blurred vision. Clinical examination, along with ultrasonography, revealed significant inflammation of the entire sclera, particularly in the posterior part, with a reduction in visual acuity in both eyes. At the same time, the patient was diagnosed with relapsing polychondritis with cardiac involvement, including intermittent second-degree atrioventricular block and paroxysmal atrial fibrillation. Initial treatment with pulse methylprednisolone rapidly improved visual acuity and resolved the scleral inflammation, also the arrhythmias subsided. Following clinical stabilization, long-term oral corticosteroids and cyclophosphamide were introduced. Genetic analysis confirmed the presence of a rare somatic mutation in the UBA1 gene, characteristic of VEXAS syndrome. Bone marrow biopsy and flow cytometry were also performed. After a multidisciplinary consultation with hematologists, treatment with baricitinib, a Janus kinase inhibitor, was initiated. After 12 months of intensive treatment, scleral inflammation is in remission, with restored visual acuity, and the patient's general condition

remains stable. This case emphasizes the critical importance of a multidisciplinary approach in managing patients with rare ocular inflammations, such as bilateral pan scleritis, presenting simultaneously with systemic conditions like relapsing polychondritis and cardiovascular complications. Collaboration between rheumatologists, cardiologists, and ophthalmologists is essential for early diagnosis, effective immunosuppressive therapy, and the prevention of irreversible organ damage and vision loss.

OBOJESTRANSKI ENDOGENI ENDOFTALMITIS KOT PRVA PREZENTACIJA GLIVIČNE SEPSE

BILATERAL ENDOGENOUS ENDOPHTHALMITIS AS THE FIRST PRESENTATION OF FUNGAL SEPSIS

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64-letni bolnik je bil hospitaliziran na GE UKC Maribor zaradi zapletov alkoholne ciroze jeter in nepojasnjene vročine. Kljub uvedeni antibiotični terapiji so bili vnetni parametri v porastu. Med vizito je pacient povedal lečeči zdravnici, da slabše vidi, na kar je bil opravljen urgentni oftalmološki pregled. Obojestransko so bili prisotni znaki endoftalmitisa s hipopionom, belkastimi sub in intraretinalnimi lezijami s pronicanjem belkastega materiala v steklovinski prostor ter intraretinalne krvavitve. Vidna ostrina je bila obojestransko gibi prstov pred očmi. Lečečemu internistu smo podali sum na endogeni endoftalmitis, najverjetneje glivični. Opravili smo obojestransko urgentno vitrektomijo, odvzeli vzorce nerazredčene in razredčene steklovine, intravitrealno aplicirali vankomicin, ceftazidim in amfotericin B. Čez 4 dni smo zaradi izgleda ponovnega poslabšanja obojestransko aplicirali vorikonazol intravitrealno. Iz vzorcev steklovine in hemokultur je porasla Candida albicans, tudi beta D glukan je bil pozitiven. Intravensko so uvedli flukonazol, nato zaradi suma na glivični endokarditis še anidulafungin. Vnetje na očeh se je umirjalo, vidna ostrina izboljševala. Četrti teden po vitrektomiji so bili ponovno prisotni znaki poslašanja endoftalmitisa z rastjo glivičnih žarišč, zato smo ponovno aplicirali vorikonazol intravitrealno v obe očesi, in čez tri dni še enkrat. Na kontroli štiri mesece po vitreoretinalnem posegu je vidna ostrina obojestransko 1,0 brez korekcije, ob arkadah in v makulah so še rumeno-belkaste vnetne lezije, ki že skoraj povsem atrofirajo, sistemski flukonazol ukinemo. Pri polimorbidnem bolniku z nepojasnjenim porastom vnetnih parametrov s klinično sliko obojestranskega endoftalmitisa lečečemu internistu podamo sum na glivično sepso, ki je bila nato tudi mikrobiološko potrjena. Origo sepse je ostal nepojasnjen, zdravljenje je bilo uspešno.

A 64-year-old patient was hospitalized at the Department of Gastroenterology of University Medical Centre Maribor due to complications of alcoholic liver cirrhosis and unexplained fever. Despite the initiated antibiotic therapy, inflammatory parameters were increasing. During bedside rounds, the patient told the attending physician that his vision was getting worse, which led to an urgent ophthalmological examination. Signs of bilateral endophthalmitis were present with hypopyon, whitish sub- and intraretinal lesions with infiltration of whitish material into the vitreous space, and intraretinal hemorrhages. Visual acuity was counting fingers bilaterally. We performed bilateral emergency vitrectomy, samples of undiluted and diluted vitreous were taken, vancomycin, ceftazidime, and amphotericin B were administered intravitreally. After 4 days, due to the appearance of deterioration of endophthalmitis, we administered voriconazole intravitreally bilaterally. Candida albicans grew from vitreous samples and blood cultures, and beta D glucan was also positive. Fluconazole was administered intravenously, also anidulafungin due to suspected fungal endocarditis. The inflammation in the eyes subsided, and visual acuity improved. Four weeks after vitrectomy, signs of worsening endophthalmitis with the growth of fungal foci were again present, so we administered voriconazole intravitreally again in both eyes, and again three days later. At the check-up four months after the vitreoretinal procedure, the visual acuity was 1.0 bilaterally without correction, there were still yellow-whitish inflammatory lesions near the arcades and in the macula, which had almost completely atrophied, and systemic fluconazole was discontinued.

FUNKCIONALNE IN MORFOLOŠKE SPREMEMBE PO VITREKTOMIJI PRI BOLNIKIH Z IDIOPATSKO EPIRETINALNO MEMBRANO STADIJA 4

FUNCTIONAL AND MORPHOLOGICAL CHANGES AFTER VITRECTOMY IN PATIENTS WITH IDIOPATHIC EPIRETINAL MEMBRANE STAGE 4

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NAMEN: Oceniti uspešnost operativnega zdravljenja idiopatske epiretinalne membrane (iERM) stadija 4 z vitrektomijo (VPP) ter opredeliti biomarkerje pooperativnega funkcionalnega izboljšanja. Predstavitev prospektivne študije in delnih rezultatov študije.
METODE: V prospektivno raziskavo bomo vključili vse psevdofake bolnike z iERM brez pridruženih očesnih bolezni, ki bodo v treh letih, od maja 2024 obravnavani v vitreoretinalni ambulanti Očesne klinike, Univerzitetnega kliničnega Centra Ljubljana in pri katerih je bila opravljena VPP z luščenjem epiretinalne ter notranje mejne membrane. Pred- in po-operativno (6 mesecev po VPP) bomo opravili pregled najboljše korigirane vidne ostrine (BCVA), optično koherentno tomografijo (OCT), angiografijo (OCTA) in autofluorescenco (AF) makule, mikroperimetrijo (MP) in multifokalni elektroretinogram (mfERG). Analizirali bomo pred- in pooperativno BCVA po Snellenu, velikosti fovealne avaskularne cone (FAZ), gostoto žilja povrhnjega (SCP VD) in globokega kapilarnega pleteža (DCP VD), fovealno in parafovealno občutljivost mrežnice ter P1 val.
REZULTATI: Vključitvenim kriterijem so do februarja 2025 ustrezali 4 bolniki. Povprečna BCVA pred operacijo je bila 0,45, po VPP 0,65. Pri dveh bolnikih je prišlo do izboljšanja BCVA iz preoperativne 0,3 in 0,4 na 0,9 in 0,7, pri dveh je BCVA ostala enaka. Po VPP je bila prisotna manjša povprečna centralna debelina mrežnice (388 µm vs. 249 µm), večja površina in obseg FAZ (0,0462 vs. 0,0534; 0,6158 vs. 0,9518, manjši SCP VD in DCP VD fovealno (36.582 vs. 32,366 in 37,557 vs. 34,611) in perifovealno (33,011 vs. 28.581 in 38,897 vs 34,233), fovealna in makularna občutljivost mrežnice sta ostali stabilni (20,90 vs. 20,95 dB; 23,7 vs. 23,4 dB), boljša je bila oblikovanost in prepoznavnost posameznih P1 valov na mfERG po celotni površini centralne mrežnice.
ZAKLJUČKI: Rezultati nakazujejo, da je funkcionalno in morfološko izboljšanje po VPP zaradi iERM možno tudi pri bolnikih z iERM stadija 4, ki sicer velja za slab napovedni dejavnik za izboljšanje vida. Izidi VPP so variabilni, zato je ključna opredelitev potencialnih biomarkerjev funkcionalnega izboljšanja.

PURPOSE: To assess the effectiveness of vitrectomy (VPP) in treating stage 4 idiopathic epiretinal membrane (iERM) and identify potential biomarkers for postoperative functional improvement. A presentation of preliminary results from a prospective study.
METHODS: This prospective analysis will include all pseudophakic patients with stage 4 idiopathic epiretinal membrane (iERM) without concomitant ocular diseases who will be evaluated at the vitreoretinal clinic of the Eye Hospital, University Medical Center Ljubljana, over three years, with beginning in May 2024. All included patients will have undergone vitrectomy (VPP) with epiretinal and internal limiting membrane peeling. Preoperative and postoperative assessments (six months after VPP) will consist of best-corrected visual acuity (BCVA), optical coherence tomography (OCT), optical coherence tomography angiography (OCTA), macular autofluorescence (AF), microperimetry (MP), and multifocal electroretinography (mfERG). We will analyze changes in BCVA (Snellen), foveal avascular zone (FAZ) size, vascular density of the superficial (SCP VD) and deep capillary plexus (DCP VD), foveal and parafoveal retinal sensitivity, and P1 wave characteristics.

RESULTS: By February 2025, four patients met the inclusion criteria. The average preoperative BCVA was 0.45, improving to 0.65 after VPP. Two patients improved BCVA from 0.3 and 0.4 preoperatively to 0.9 and 0.7 postoperatively, while BCVA remained stable in two patients. Following VPP, there was a reduction in average central retinal thickness (388 µm vs. 249 µm), an increase in FAZ area and perimeter (0.0462 vs. 0.0534; 0.6158 vs. 0.9518), and a decrease in SCP VD and DCP VD both foveally (36.582 vs. 32.366 and 37.557 vs. 34.611) and perifoveally (33.011 vs. 28.581 and 38.897 vs. 34.233). Foveal and macular retinal sensitivity remained stable (20.90 vs. 20.95 dB; 23.7 vs. 23.4 dB). The morphology and distinctiveness of P1 waveforms on mfERG improved across the entire central retina.
CONCLUSIONS: The results suggest that functional and morphological improvements following VPP for stage 4 iERM are possible, despite stage 4 iERM being typically considered a poor prognostic factor for visual recovery. Given the variability in VPP outcomes, identifying potential biomarkers for predicting functional improvement is essential.

KLINIČNI PRIMER PACIENTA S HOMONIMNO HEMIANOPSIJO

CLINICAL CASE OF A PATIENT WITH HOMONYMOUS HEMIANOPSIA

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Predstavljamo klinični primer 58-letnega pacienta, ki smo ga obravnavali v oftalmološki nujni ambulanti, zaradi levostranske homonimne hemianopsije v sklopu razsoja adenokarcinoma požiralnika z metastazami v možganih. Pacient je ob prvem pregledu v oftalmološki ambulanti navajal, da približno 2 meseca občasno ne vidi zunanje polovice vidnega polja levega očesa. Ob tem ga boli glava in zdi se mu, da je bolj utrujen in omotičen. V anamnezi o pridruženih obolenjih pove, da je pred tremi meseci uspešno zaključil zdravljenje adenokarcinoma distalnega dela požiralnika. Vidna ostrina je bila desno 0,7 s korekcijo in levo 0,9 s korekcijo po Snellenu. Med obravnavo smo opravili preiskave sprednje in zadnje biomikroskopije, bulbomotoriko, RAPD, fotografiranje očesnega ozadja, OCT makul in testiranje vidnega polja s statično perimetrijo na aparatu Octopus. V očesnem statusu, razen začetne fibroze leve zadnje lečne kapsule, ni bilo odstopanj od normale. RAPD je bil odsoten. OCT makul ni pokazal patoloških sprememb mrežnice. Preiskava vidnega polja je pokazala popolno levostransko homonimno hemianopsijo. Napoten je bil na nadaljno diagnostiko v nevrološko nujno ambulanto, kjer so ugotavljali levostransko hemiparezo in opravili urgentni CT glave s kontrastom, ki je pokazal hipervaskularne metastaze subkortikalno desno frontalno, desno okcipitalno, desno parietalno in levo cerebelarno, z izrazitim edemom ter pomikom možganovine v levo. V našem primeru je šlo za popolno levostransko homonimno hemianopsijo z odsotnim RAPD, kar nakazuje, da je najverjetnejši vzrok zanjo metastaza desno okcipitalno in pridružen obsežen edem bele možganovine. S primerom želimo poudariti pomen natančne anamneze, ki je velikokrat ključnega pomena za pravilno nadaljno obravnavo pacienta.

In this case report, we present a case of a 58-year-old patient, who was presented to ophthalmologic emergency room due to left-sided homonymous hemianopsia as a part of the esophageal adenocarcinoma with metastasis to the brain. When the patient was first examined, he reported, that for about two months, he occasionally could not see the outer half of the visual field of his left eye. Furthermore, he experienced headaches and felt more tired and dizzy. In his medical history, he revealed, that three months prior, he had successfully completed treatment for adenocarcinoma of the distal esophagus. Visual acuity on the right eye was 0.7 with correction and on the left eye 0.9 with correction according to Snellen. During the examination, we performed anterior and posterior biomicroscopy, eye movement assessment, RAPD, fundus photography, OCT of the macula and static perimetry. In the ocular examination, except for mild fibrosis of the left posterior lens capsule, there were no abnormalities. RAPD was absent. OCT of the macula did not show any pathological retinal changes. The visual field test revealed a complete left-sided homonymous hemianopsia. The patient was referred for further diagnostics to the neurology department, where they found left sided hemiparesis and performed an urgent CT scan of the head, which revealed hypervascular metastases in the subcortical regions of the right frontal, right occipital, right parietal and left cerebellar areas, with significant edema and shift of the brain matter to the left. In our case, the complete left-sided homonymous hemianopsia with an absent RAPD, was most likely the result of a metastasis in the right occipital lobe with extensive edema of the white matter. With this case, we aim to emphasise the importance of a thorough medical history, which is often crucial for the proper further management of the patient.

SINDROM OMEJENE HORIZONTALNE BULBOMOTORIKE IN PROGRESIVNE SKOLIOZE - PRIKAZ PRIMERA

HORIZONTAL GAZE PALSY AND PROGRESSIVE SCOLIOSIS SYNDROME - CASE REPORT

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Namen prispevka je predstaviti 2 primera s sindromom omejene horizontalne bulbomotorike in progresivne skolioze (angl. Horizontal Gaze Palsy and progressive scoliosis syndrome). V strokovni literaturi so opisani le posamezni primeri sindroma. Na Očesni Kliniki v Ljubljani sta bila pregledana 2 otroka (sorojenca) z omejeno abdukcijo in addukcijo. Po opravljenih dodatnih preiskavah je bilo ugotovljeno, da gre za sindrom omejene horizontalne bulbomotorike in progresivne skolioze. Gre za redko avtosomno recesivno bolezen, povzročeno z mutacijo ROBO 3 gena na kromosomu 11, ki nadzoruje križanje nevronov možganskega debla oz izraščanje nevrita, vodenje rastnega stožca in fascikulacijo aksonov. Od oftalmoloških znakov je prisotna popolna omejenost abdukcije in addukcije čez primarni položaj ob ustrezni elevaciji in depresiji. Omejena bulbomotorika lahko privede do diplopije s posledično možno ambliopijo. Značilne so radiološke spremembe na MRI: izguba facialnega kolikulusa zaradi odsotnosti jedra n. abducensa, znak razcepljenega ponsa, metuljni izgled in hipolazija medulle oblongate, anomalije 4. ventrikla. Radiološke preiskave hrbtenice pokažejo skoliozo. Terapija oftalmoloških simptomov je individualizirana in lahko vključuje predpis prizemskih leč v primeru diplopije. Najbolj pogosto gre za predpis prizem nižjih jakosti (do 20PD). V poštev pride tudi operacija strabizma, najbolj pogosto zaradi esodeviacije do 20 PD. Pri otrocih je opisan tudi razvojni zaostanek, ki se je pa izboljšal po postavitvi diagnoze in razumevanja specifičnih oftalmoloških omejitev s strani terapevtov. Ključno je tudi učenje vsakodnevnih strategij za premagovanje ožjega funkcionalnega vidnega polja. Zgodnje prepoznavanje sindroma omejene horizontalne bulbomotorike in progresivne skolioze omogoča hitro ukrepanje in ustrezno multidisciplinarno zdravljenje.

The purpose of the article is to present 2 cases with horizontal gaze palsy and progressive scoliosis syndrome. Only individual cases of the syndrome are described in literature. 2 children (siblings) with limited abduction and adduction were examined at the Eye Clinic in Ljubljana. After additional examinations the diagnose of horizontal gaze palsy and progressive scoliosis syndrome was determined. It is a rare autosomal recessive disease caused by a mutation of the ROBO 3 gene on chromosome 11, which controls the crossing of brainstem neurons, neurite outgrowth, growth cone guidance and axon fasciculation. Of the ophthalmological signs, there is complete limitation of abduction and adduction beyond the primary position with appropriate elevation and depression. Limited bulbomotor palsy can lead to diplopia with subsequent possible amblyopia. Radiological changes on MRI are characteristic: loss of the facial colliculus due to the absence of the abducens nerve nucleus, split pons sign, butterfly appearance and hypoplasia of the medulla oblongata, anomalies of the 4th ventricle. Radiological examinations of the spine show scoliosis. Therapy of ophthalmological symptoms is individualized and may include the prescription of prism lenses in the case of diplopia. Most often, it is the prescription of prisms of lower powers (up to 20PD). Strabismus surgery is also considered, most often due to esodeviation up to 20 PD. Developmental delay has also been described in children, which improved after the diagnosis and understanding of specific ophthalmological limitations by therapists. Learning everyday strategies to overcome a narrower functional visual field is also crucial. Early recognition of the syndrome of limited horizontal bulbomotor activity and progressive scoliosis allows for rapid intervention and appropriate multidisciplinary treatment.

TVEGANJA OČESNE IZPOSTAVLJENOSTI IN ZAŠČITNI UKREPI PRI ZOBOZDRAVSTVENEM DELU S POLIMERIZACIJSKIMI LUČMI: PILOTSKA ŠTUDIJA

RISKS OF OCULAR EXPOSURE AND PROTECTIVE MEASURES IN DENTAL WORK WITH POLYMERIZATION LIGHTS: A PILOT STUDY

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UVOD: Pri vsakodnevnem delu v zobozdravstvu so zobozdravniki in medicinske sestre nenehno izpostavljeni svetlobi (~440 nm modrega spektra) polimerizacijskih luči, ki omogočajo strjevanje sodobnih kompozitnih dentalnih materialov. Zaradi te stalne izpostavljenosti svetlobi obstaja potencialno fotokemično tveganje za poškodbe roženice in mrežnice, tako pri zdravstvenih delavcih kot tudi pri bolnikih. Kljub obstoju varnostnih smernic se upoštevanje zaščitnih ukrepov še vedno izvaja nedosledno. Namen te pilotske študije je preučiti vedenje o izpostavljenosti, zaščitne prakse in ozaveščenost o simptomih med 10 zdravniki dentalne medicine, ki imajo najmanj 10-letno prakso.
METODE: V tej pilotski presečni raziskavi (n=10) smo ocenili dolžino izpostavljenosti svetlobi, uporabljene zaščitne ukrepe (očala z oranžnim filtrom, očala z modrim filtrom ipd.), prepričanje o zadostni zaščiti ter očesne simptome, značilne za sindrom suhega očesa (npr. suhost, fotofobija). Predpostavili smo, da bodo običajna korekcijska očala glavna 'zaščitna' strategija udeležencev raziskave, medtem ko bo uporaba namenskih zaščitnih očal manj pogosta.
REZULTATI: V nasprotju z našo hipotezo so udeleženci večinoma uporabljali očala z oranžnim filtrom (60 %), 20 % jih je uporabljalo navadna očala z filtrom za modro svetlobo, medtem ko 20 % ni uporabljalo nobene zaščite. Večina je poročala o pogosti izpostavljenosti svetlobi (več kot 10 aktivacij na dan), pri čemer je 60 % zobozdravnikov uporabljalo polimerizacijske luči več kot 20-krat na dan ali manj kot 10-krat na dan. Kljub temu, da se je 70 % vprašanih zavedalo tveganj zaradi modre svetlobe, so se mnenja o zaščitnih praksah razlikovala: 60 % jih je menilo, da je izogibanje pogledu v luči dovolj, 20 % je verjelo v zaščitni pokrov na ročaju svetilke, 20 % pa je menilo, da so potrebna očala z oranžnimi filtri. Čeprav večina ni poročala o kroničnih simptomih, je med 10-30 % udeležencev občasno opazilo težave, kot so zamegljen vid ali občutek suhih oči.
ZAKLJUČEK: Naše ugotovitve se skladajo z literaturo, ki poroča, da očala z oranžnim filtrom uporablja med 40 in 80 % zobozdravnikov. Kljub poročanju o uporabi teh zaščitnih očal pa obstaja jasno neskladje med dejansko uporabo in poznano zadostnostjo zaščite. V dejanski klinični praksi je uporaba zaščite v primerjavi s poročano iz literature še nižja, kar vzbuja zaskrbljenost glede dolgoročnega zdravja oči. Naši rezultati poudarjajo nujnost strokovnega izobraževanja o fotokemičnih nevarnostih za očesno zdravje ter večje promocije uporabe namenskih zaščitnih očal. Potrebne so tudi dodatne raziskave, ki bi pojasnile vpliv modre svetlobe na očesno površino.

INTRODUCTION: In daily dental practice, dentists and dental assistants are constantly exposed to the light (~440 nm blue spectrum) of polymerization lights, which allow for the hardening of modern composite dental materials. Due to this constant exposure to light, there is a potential photochemical risk of damage to the cornea and retina, both for healthcare workers and patients. Despite the existence of safety guidelines, the adherence to protective measures is still inconsistent. The aim of this pilot study is to investigate awareness, protective practices, and symptom awareness regarding exposure among 10 dental professionals with at least 10 years of experience.
METHODS: In this pilot cross-sectional study (n=10), we assessed the duration of light exposure, protective measures used (glasses with orange filters, glasses with blue filters, etc.), beliefs about sufficient protection, and

ocular symptoms of dry eye disease (e.g., dryness, photophobia). We hypothesized that regular corrective glasses would be the main 'protective' strategy among study participants, while the use of dedicated protective glasses would be less common.
RESULTS: Contrary to our hypothesis, participants mostly used glasses with orange filters (60%), 20% used regular glasses with a blue light filter, while 20% did not use any protection. Most reported frequent exposure to light (more than 10 activations per day), with 60% of dentists using polymerization lights more than 20 times a day or less than 10 times a day. Despite 70% of participants being aware of the risks associated with blue light, opinions about protective practices varied: 60?lieved that avoiding looking directly at the lights was enough, 20?lieved the protective cover on the light handle was sufficient, and 20% thought that orange-filter glasses were necessary. Although most did not report chronic symptoms, 10-30% of participants occasionally experienced issues such as blurred vision or the sensation of dry eyes.
CONCLUSION: Our findings are consistent with the literature, which reports that 40-80% of dentists use glasses with orange filters. Despite reports of using these protective glasses, there is a clear discrepancy between actual use and the known adequacy of protection. In actual clinical practice, the use of protection is even lower compared to what is reported in the literature, raising concerns about long-term eye health. Our results emphasize the need for professional education on the photochemical dangers to eye health and greater promotion of the use of dedicated protective glasses. Additional studie are needed in order to confirm the effect of blue light on occular surface.

UPORABA OČAL ZA NAVIDEZNO RESNIČNOST ZA OCENO PRIZADETOSTI SPREJEMANJA ODLOČITEV NA PODLAGI VIDNE ZAZNAVE PRI BOLNIKIH S SLABOVIDNOSTJO

THE USE OF VIRTUAL REALITY GLASSES FOR ASSESSING IMPAIRMENT IN DECISION-MAKING BASED ON VISUAL PERCEPTION IN PATIENTS WITH VISUAL IMPAIRMENT

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****Deljeno prvo avtorstvo***

NAMEN: Opredeliti uporabnost očal za navidezno resničnost za oceno sprejemanja odločitev na podlagi vidne zaznave.
METODE: V raziskavo je bilo vključenih 16 bolnikov s slabovidnostjo (povprečna starost 65 let, razpon 26–80 let; 5 moških) in 16 zdravih kontrol (povprečna starost 52 let, razpon 25-69 let; 5 moških). Bolniki so imeli bodisi okvaro centralnega (N = 8) in/ali perifernega vida (N = 8). Njihova povprečna najboljša korigirana vidna ostrina na boljšem očesu je bila 0,4 (0,2–1,0). Z očali za navidezno resničnost smo opravili testa prepoznave obrazov in orientacije v prometu. Primerjali smo število zaznav opredeljenih elementov (obrazi in avtomobili določene barve) ter čas, potreben za prepoznavo obrazov in varnega prehoda ceste.
REZULTATI: Bolniki so prepoznali manj obrazov kot kontrole (povprečno 9,6 in 11,1) in potrebovali več časa za njihovo prepoznavo (povprečno 4,3 in 3,3 sekund). Pri testu orientacije v prometu ni bilo razlik v številu zaznanih avtomobilov in varnih prehodov, ugotavljali pa smo za povprečno 0,9 sekunde zakasnjen čas ocene varnega prehoda ceste.
ZAKLJUČEK: Bolniki s slabovidnostjo odločitve na podlagi vidne zaznave sprejemajo z zakasnitvijo. Uporaba očal za navidezno resničnost se izkazuje kot napredna metoda za varno in standardizirano analizo vpliva slabovidnosti na zaznavo življenjskih prizorov, saj ne govorimo več o predvidevanjih, ampak nazorno prikazujemo dejansko izkušnjo preiskovancev. S tem omogočamo pridobivanje realnih podatkov, ki so ključni za nadaljnje prilagoditve in izboljšave v vsakdanjem življenju slabovidnih oseb.

PURPOSE: To define the use of virtual reality glasses for assessing decision-making based on visual perception.
METHODS: The study included 16 patients with visual impairment (mean age 65, range 26–80 years; 5 males) and 16 healthy controls (mean age 52, range 25–69 years; 5 males). Patients had either central (N = 8) and/or peripheral (N = 8) visual impairment. Their mean best-corrected visual acuity in the better-seeing eye was 0.4 (0.2–1.0). Using virtual reality glasses, we conducted face recognition and traffic orientation tests. We compared the number of detected predefined elements (faces and vehicles of a specific colour) and the time required for face recognition and safe road crossing.
RESULTS: Patients recognized fewer faces than controls (mean 9.6 vs. 11.1) and required more time for recognition (mean 4.3 vs. 3.3 seconds). In the traffic orientation test, there were no differences in the number of detected vehicles or safe crossings; however, we observed a mean delay of 0.9 seconds in assessing the appropriate moment for safe road crossing.
CONCLUSION: Patients with visual impairment exhibit delayed decision-making based on visual perception. The use of virtual reality glasses has proven to be an advanced method for the safe and standardized analysis of the impact of visual impairment on the perception of real-life scenarios, as it shifts from assumptions to a direct representation of the actual experience of participants. This enables the acquisition of objective data, which are crucial for further adaptations and improvements in the daily lives of visually impaired individuals.

OČESNA PLASTIČNA KIRURGIJA

OCULOPLASTICS

PREDSTAVITEV PODROČJA OČESNE PLASTIČNE KIRURGIJE V SLOVENIJI

OCULOPLASTIC SURGERY IN SLOVENIA - AN OVERVIEW

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ORBITALNI CELULITIS

ORBITAL CELLULITIS

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OBRAVNAVA PREKOMERNEGA SOLZENJA: KLINIČNI PREGLED IN REŠITVE

MANAGING EXCESSIVE TEARING: CLINICAL EXAMINATION AND SOLUTIONS

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NAMEN: Prikazati najpogostejše razloge za prekomerno solzenje, kako opraviti usmerjen klinični pregled in kako težave zdravimo. Glede na vzrok težave, bodo prikazane metode zdravljenja, ki jih izvajamo na Očesni kliniki v Ljubljani. Poudarek bo tudi na zdravljenju, ki ga lahko izvajamo v ambulantah na sekundarni ravni in tistih, ki jih zaradi zahtevnosti izvajamo v terciarnih ustanovah. Prikazan bo tudi način napotovanja na terciarno raven obravnave.

PURPOSE: To present the most common causes for excessive tearing, how to perform clinical examination and how the problems are treated. The treatment methods that are performed at the Eye Clinic in Ljubljana will be shown. Treatment methods that can be performed in outpatient clinics at the secondary level and those that, due to their complexity, are performed in tertiary institutions will be highlighted. The form of referral to the tertiary level will also be demonstrated.

SEBACEALNI KARCINOM V PERIOKULARNEM PODROČJU

PERIOCULAR SEBACEOUS CELL CARCINOMA

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NAMEN: Predstaviti klinično sliko, diagnostično in terapevtsko obravnavo bolnikov s sebacealnim karcinomom (ang. Sebaceous cell carcinoma, SbCC) v periokularnem področju.
METODE: Pregled literature in predstavitev kliničnih primerov SbCC v periokularnem področju.
REZULTATI: SbCC v periokularnem področju je redek, a agresiven maligni tumor, ki lahko zaradi posnemanja benignih in vnetnih stanj predstavlja pomemben diagnostični izziv. V primeru pagetoidnega širjenja ali difuzne prizadetosti veznice je t.i. mapping biopsija veznice ključna pri odkrivanju razširjenosti in izboru primernega terapevtskega pristopa. Primarno zdravljenje ostaja lokalna ekscizija, pri napredovalih primerih pa pride v poštev ekzenteracija orbite ali adjuvantna terapija, kot so krioterapija, lokalna kemoterapija, radioterapija in sistemska terapija.
ZAKLJUČEK: Zgodnje prepoznavanje, natančna diagnoza in multidisciplinarni terapevtski pristop pri obravnavi bolnikov s SbCC v periokularnem področju so bistvenega pomena za izboljšanje prognoze in zmanjšanje tveganja za recidiv.

PURPOSE: To present clinical picture, diagnostic and therapeutic options in periocular sebaceous cell carcinoma (SbCC).
METHODS: Literature review and presentation of clinical cases of periocular SbCC.
RESULTS: Periocular SbCC is a rare but aggressive malignancy that presents significant diagnostic challenges due to its ability to mimic benign and inflammatory conditions. In case of a pagetoid or diffuse conjunctival spread, a conjunctival mapping biopsy might help determine the extent of disease and assist with preoperative planning. The primary treatment remains local excision, while orbital exenteration and adjuvant therapies, including cryotherapy, local chemotherapy, radiotherapy, and systemic treatments, are considered in advanced cases.
CONCLUSION: Early recognition, accurate diagnosis, and a multidisciplinary treatment approach are essential for optimizing prognosis and reducing recurrence rates in periocular SbCC.

REKONSTRUKCIJA PO IZREZU VEČJIH TUMORJEV V PODROČJU NOTRANJEGA ALI ZUNANJEGA OČESNEGA KOTA

RECONSTRUCTION ATER EXCISION OF BIGGER TUMORS IN MEDIAL OR LATERAL CANTHAL EYLID AREA

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NAMEN: prikazala bom različne pristope k rekonstrukciji glede na lastnosti okoliških tkiv. Periokularna koža meji anatomsko na kožo nosu, obraza, temporalne regije in čela. večji tumorje segajo v več regij in rekonstrukcija večjih tumorjev zajema tudi poznavanja sosednjih anatomskih regij.
METODA: pri rekonstrukcijah se lahko poslužujemo različnih lokalnih režnjev kot so: romboidni, glabelarni, rotacijski... pri večjih defektih pa lahko režnje tudi sestavljamo.
REZULTAT: po vsaki periokularni rekonstrukciji je potrebno zagotoviti normalno funkcijo zgornje in spodnje veke, očesa in vseh sosednjih organov.
ZAKJUČEK: obrazna tkiva so omejene velikosti in ob večjih rekonstrukcijah lahko hitro pride do asimetričnosti obraznih polovic. Cilj vsake operacije poleg funkcionalnega rezultata tudi čim boljši estetski rezultat.

PURPOSE: I will show different approaches to periocular reconstruction depending on the properties of the surrounding tissues. Periocular skin anatomically borders the skin of the nose, face, temporal region and forehead. A larger tumors extend into several regions and the reconstruction of larger tumors also involves knowledge of adjacent anatomical regions.
METHOD: in reconstructions, we can use different local flaps, such as: rhomboid, glabellar, rotary... and in the case of larger defects, the flaps can also be assembled.
RESULT: after each periocular reconstruction, it is necessary to ensure the normal function of the upper and lower eyelids, the eye and all adjacent organs.
CONCLUSION: facial tissues are limited in size, and with larger reconstructions, asymmetry of the facial halves can quickly occur. The goal of every operation is not only a functional result, but also the best possible aesthetic result.

POŠKODBA ZGORNJE VEKE Z ZADRGO PRI OTROKU; PREGLED LITERATURE IN PRIKAZ PRIMERA

ZIPPER INJURY OF THE UPPER EYELID IN A CHILD; LITERATURE REVIEW AND A CASE REPORT

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Poškodbe z vkleščeno kožo vek v zadrgo so v oftalmološki praksi redke. Pogosteje, vendar še vedno redko, se s takšnimi poškodbami srečujejo urologi in kirurške urgentne ambulante. Najpogosteje so opisane poškodbe kože penisa in skrotuma. Pacienti so najpogosteje mlajši otroci oz. fantje, intoksicirani odrasli moški ter duševno manj razvite osebe, starejši moški, ki trpijo za posledicami ovirane gibljivosti in kognitivnega upada. Te vrste poškodb zaradi ukleščenja kože z zadrgo zahtevajo tehniko za varno in hitro sprostitev ukleščenih tkiv, da preprečimo nadaljnje zaplete. Zaradi svoje redkosti sta tako bolnik kot zdravnik v primeru takšne poškodbe izpostavljena stresu. V literaturi so opisane različne tehnike za sprostitev zadrge, kot so rezanje, vlečenje in zvijanje. Najpogosteje uporabljena tehnika je rezanje srednje prečke zadrge. Druga pogosto uporabljena metoda je nežno vlečenje namazane zadrge, za sprostitev ujete kože. Druge tehnike opisujejo sukanje majhnega ploščatega izvijača med obema sprednjima ploščicama zadrge, z namenom, da se poveča režo - vendar obstaja tveganje za poškodbo ujete kože. V literaturi, ki je primerjala različne tehnike odstranjevanja ujete kože iz zadrg, je bilo mazanje z lubrikantom najbolj pogosta in uspešno opisana metoda. V bazi PubMed sta opisana dva primera ujete zgornje veke v zadrgo, oba pri otroku. Predstavljamo primer sedemletne deklice, ki je prišla v urgentno ambulanto z zgornjo veko ujeto v zadrgo. Nesreča se ji je zgodila med oblačenjem oz. slačenjem zaprte jakne čez glavo. Deklica je bila prestrašena in relativno bolečinsko prizadeta. Po pogovoru in strinjanjem obeh z mamo smo se odločili za odstranjevanje zadrge v topični anesteziji z lubrikacijo in poskusom odpiranja. Zadrgo smo uspešno odstranili brez dodatne poškodbe kože. Mišice zgornje veke niso bile prizadete. Vkleščena koža se je po uporabi topične terapije obnovila brez vidnih posledic.

Zipper injuries with skin entrapment are rare in ophthalmological practice. More often, but still rarely, such injuries are encountered by urologists and surgical emergency departments. The most frequently described injuries are skin injuries of the penis and scrotum. Patients are most often young children or boys, intoxicated adults and mentally handicapped and elderly suffering from movement or cognitive disorders. These types of injuries due to skin entrapment by a zipper require a technique for safe and rapid release of the trapped tissues to prevent further complications. Due to their rarity, both the patient and the doctor are exposed to stress in the event of such an injury. Various techniques for releasing the zipper, such as cutting, pulling and twisting, have been described in the literature. The most commonly used technique is cutting the middle bar of the zipper. Another frequently used method is gently pulling the lubricated zipper to release the skin. Other techniques include twisting a small flathead screwdriver between the two faceplates of the zipper to widen the gap or using trauma scissors or a needle holder to remove the teeth; however, these have the risk of damaging the entrapped skin In the literature comparing different techniques for removing skin from zippers, lubrication with lubricant was the most common and successfully described method. Two cases of upper eyelid skin entrapment have been described in the PubMed database, both in children. We present a case of a 7-year-old girl who came to the emergency department with her upper eyelid entrapped in a zipper. The accident occurred while she was dressing her jacket over her head. The girl was distressed, frightened and in pain. After discussion and agreement with the girl and the mother, we decided to extract the zipper under topical anesthesia with lubrication and an attempt to open it. The zipper was successfully removed without additional skin damage. The muscles of the upper eyelid were not affected. The entrapped skin recovered without visible consequences after using topical therapy.

ALGORITEM ZA OBRAVNAVO BOLNIKOV Z DISTIROIDNO OPTIČNO NEVROPATIJO

ALGORITHM FOR THE MANAGEMENT OF PATIENTS WITH DYSTHYROID OPTIC NEUROPATHY

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NAMEN: Predstaviti predlog algoritma za obravnavo pacientov z distiroidno optično nevropatijo (DON), ki temelji na smernicah Evropske skupine za ščitnično orbitopatijo (EUGOGO).
METODE: Analizirali smo dva klinična primera DON, ki sta bila obravnavana v skladu s smernicami EUGOGO iz leta 2021. Na podlagi te analize in pregleda literature smo razvili algoritem za obravnavo pacientov z DON, prilagojen našemu prostoru.
REZULTATI: Oba pacienta sta najprej imela najprej medikamentozno (glukokortikoidi intravenozno) in nato še kirurško (endoskopsko) dekompresijo orbite. Pri obeh smo tekom zdravljenja opažali klinično izboljšanje. Predlagani algoritem vključuje oceno aktivnosti in resnosti bolezni, obvladovanje dejavnikov tveganja, ustrezno terapijo ter spremljanje odziva na zdravljenje. Zdravljenje vključuje najprej medikamentozno dekompresijo, čemur sledi kirurška dekompresija orbit, v kolikor primarno zdravljenje ni uspešno. Pri tem je medialna dekompresija ključna, lateralna pa se lahko dodatno izvede v izbranih primerih.
ZAKLJUČEK: Ustrezna in pravočasna obravnava DON je ključnega pomena za preprečitev trajne izgube vida. Predlagani algoritem, ki temelji na smernicah EUGOGO iz leta 2021, ponuja strukturiran pristop k diagnostiki in zdravljenju DON ter lahko oftalmologom služi kot praktično orodje pri obravnavi pacientov s ščitnično orbitopatijo.

PURPOSE: To present a proposed algorithm for the management of patients with dysthyroid optic neuropathy (DON), based on the guidelines of the European Group on Graves' Orbitopathy (EUGOGO).
METHODS: We analyzed two clinical cases of DON that were managed according to the 2021 EUGOGO guidelines. Based on this analysis and a review of the literature, we developed a patient management algorithm for DON adapted to our clinical setting.
RESULTS: Both patients initially received medical treatment with intravenous glucocorticoids, followed by surgical (endoscopic) orbital decompression. In both cases, clinical improvement was observed throughout the course of treatment. The proposed algorithm includes an assessment of disease activity and severity, risk factor management, appropriate therapy selection, and monitoring of treatment response. The treatment initially includes medical decompression, followed by surgical orbital decompression if the primary treatment is unsuccessful. Medial decompression is crucial, while lateral decompression can be performed additionally in selected cases.
CONCLUSION: Adequate and timely management of DON is crucial for preventing permanent vision loss. The proposed algorithm, based on the 2021 EUGOGO guidelines, provides a structured approach to the diagnosis and treatment of DON and can serve as a practical tool for ophthalmologists in the management of patients with thyroid orbitopathy.

REHABILITATIVNA ORBITALNA DEKOMPRESIJA PRI ŠČITNIČNI ORBITOPATIJI: PRIKAZ PRIMERA

REHABILITATIVE ORBITAL DECOMPRESSION IN THYROID ORBITOPATHY: A CASE REPORT

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NAMEN: Predstaviti rezultate večletnega spremljanja pacientke s ščitnično orbitopatijo, pri kateri je bila zaradi napredovale bolezni in izrazite proptoze levega očesa izvedena enostranska rehabilitativna orbitalna dekompresija.
PREDSTAVITEV PRIMERA: 55-letna bolnica z avtoimunsko boleznijo ščitnice se je konec leta 2013 pojavila oteklina leve zgornje veke. CT in ultrazvok orbite sta potrdila diagnozo ščitnične orbitopatije. Leta 2014 je oftalmolog zaradi zmerno aktivne bolezni odredil pulzno peroralno kortikosteroidno zdravljenje. Ob koncu leta 2014 kontrolni pregled ni pokazal aktivne bolezni, priporočeno je bilo nadaljnje spremljanje pri področnem oftalmologu. Leta 2017 je zaradi poslabšanja simptomov obiskala urgentno oftalmološko ambulanto. Stopnja klinične aktivnosti (CAS) je bila 1 na desnem (OD) in 4 na levem očesu (OS), Hertlova eksoftalmometrija pa je pokazala 3 mm protruzijo levega očesa. Kljub tritedenski peroralni kortikosteroidni terapiji so se simptomi poslabšali. Pacientka je bila evtirotična in ni potrebovala zdravljenja ščitnice. Zaradi napredovanja simptomov in povečanja proptoze levega očesa na 5 mm razlike, brez znakov distiroidne optične nevropatije (DON), je pacientka leta 2018 prestala levostransko rehabilitativno lateralno orbitalno dekompresijo in kantoplastiko. Leto kasneje je sledila obojestranska blefarotomija za korekcijo retrakcije vek. Leta 2020 je zaradi vztrajajočega hipertiroidizma prejela zdravljenje z radioaktivnim jodom.
REZULTATI: V dveh letih po operaciji se je protruzija levega očesa zmanjšala za 8 mm v primerjavi z desnim. V štirih letih po posegu je bolnica prejela več ciklov peroralne kortikosteroidne terapije za obvladovanje zmerno aktivne ščitnične orbitopatije. V letu 2022 je bolezen prešla v remisijo, brez znakov aktivnosti po CAS točkovniku. Šest let in pet mesecev po dekompresiji leve orbite je zmanjšanje proptoze stabilno, vidna funkcija ohranjena, pacientka pa poroča le o občasnih simptomih suhega očesa. Blaga iatrogena ptoza leve zgornje veke ne vpliva na vidno funkcijo.
ZAKLJUČEK: Rehabilitativna orbitalna dekompresija in obojestranska blefarotomija sta učinkoviti kirurški metodi za zdravljenje izrazite proptoze pri zmerni do hudi ščitnični orbitopatiji, kadar konzervativno zdravljenje ni uspešno. V našem primeru je kirurški poseg pripomogel k zmanjšanju posledic bolezni in izboljšanju kakovosti življenja pacientke.

PURPOSE: To present a long-term follow-up of a female patient with thyroid orbitopathy who required unilateral rehabilitative orbital decompression due to progressive disease and significant proptosis of the left eye.
CASE PRESENTATION: A 55-year-old female with autoimmune thyroid disease developed left upper eyelid swelling in late 2013. Orbital CT and ultrasound confirmed thyroid orbitopathy. In 2014, she underwent an ophthalmological assessment and received pulse oral corticosteroid therapy for moderately severe active disease. By late 2014, follow-up showed no active disease, and she was referred for routine monitoring. In 2017, she presented to emergency ophthalmology with worsening symptoms. A Clinical Activity Score (CAS) of 1 in the right eye (OD) and 4 in the left (OS) was recorded, and 3 mm higher proptosis of OS compared to OD measured with Hertel exophthalmometry. Despite a 3-week course of oral corticosteroids symptoms worsened. She was euthyroid and not requiring any thyroid treatment. As symptoms progressed and proptosis increased to a 5 mm difference without signs of dysthyroid optic neuropathy, she underwent rehabilitative lateral orbital decompression with canthoplasty of OS in 2018. In 2019, bilateral blepharotomy was performed for eyelid retraction. In 2020, due to persistent hyperthyroidism she received radioactive iodine treatment.

RESULTS: Over the two years following surgery, the protrusion of OS decreased by 8 mm compared to OD. In the four years after surgery, multiple courses of oral corticosteroids were administered to manage moderately active orbitopathy. By 2022, the disease entered remission, with no signs of activity based on the CAS score. At the last follow-up visit, 6 years and 5 months after surgical intervention, the resolution of proptosis remained stable, visual function was preserved and the patient reported only occasional dry eye symptoms. Mild iatrogenic ptosis of the left upper eyelid persists but does not impair visual function.
CONCLUSION: Rehabilitative orbital decompression and bilateral blepharotomy is an effective surgical approach for moderate to severe thyroid orbitopathy with significant proptosis when conservative treatment proves insufficient. In our case, surgical intervention helped to reduce the disease consequences and enhance the patient's quality of life.

PAREZA OBRAZNEGA ŽIVCA

FACIAL NERVE PALSY

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Pareza obraznega živca lahko vodi v zaplete, ki ogrožajo vid. Obstajajo različne kirurške tehnike, ki izboljšajo bolnikovo nelagodje in preprečujejo najhujše zaplete zaradi izpostavljenosti roženice. Pristop do bolnika je individualen in se razlikuje glede na fazo in stopnjo pareze obraznega živca ter glede na preference in zmožnosti okuloplastičnega kirurga. V akutni fazi pareze obraznega živca je nujna zaščita površine roženice z intenzivnim vlaženjem in zaprtjem vek - s pomočjo vlažnih komor, tarzorafije ali z botoksom inducirane ptoze zgornje veke. Večini pacientov se s časom pareza obraznega živca izboljša. Za bolnike z vztrajno parezo pa so pogosto potrebni dodatni rekonstrukcijski kirurški posegi. Predstavila bom nekaj kliničnih primerov bolnikov s parezo obraznega živca, ki smo jih oskrbeli na Očesnem oddelku UKC Maribor.

Facial nerve palsy can lead to sight threatening complications. There are different surgical techniques to improve patient's discomfort and to prevent devastating complications from corneal exposure. Approach is individual and it varies with the stage and grade of nerve palsy disease and with surgeon's preferences and capabilities. In acute stage of facial nerve palsy it is essential for an ophthalmologist to protect corea surface by intensive lubrication and eye lid closure - either by patching, tarsorrhaphy, botox induced lid ptosis etc. Majority of patients recover. But for those who do not recover additional reconstructional surgical techniques are often needed. I will present few clinical cases and their oculoplastic management at Eye department in UKC Maribor.

NAJHUJŠI OČESNI ZAPLET PO APLIKACIJI DERMALNIH POLNIL: PRIKAZ PRIMERA IN PREGLED LITERATURE

DEVASTATING OCULAR COMPLICATION OF DERMAL FILLERS: CASE REPORT AND REVIEW OF LITERATURE

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NAMEN: Injiciranje dermalnih polnil je pogosto uporabljana tehnika za izboljšanje obraznih gub in kontur. Čeprav velja za minimalno invaziven poseg, pa ima redko lahko zelo hude očesne zaplete, ki se končajo s slepoto. Naš namen je pregledati pogostnost in značilnosti najhujših očesnih zapletov injiciranja dermalnih polnil.
METODE: Pregled primerov najhujših očesnih zapletov po injiciranju dermalnega polnila iz literature in arhiva Očesne klinike, Univerzitetnega kliničnega centra Ljubljana.
REZULTATI: Od pričetka uporabe dermalnih polnil je opisanih več kot 500 hudih očesnih zapletov, pri katerih je prišlo do slepote. Mesta injiciranja z največjim tveganjem so nos, čelo in glabela. Izguba vida je povezana s prizadeto arterijo, in sicer gre lahko za okluzijo oftalmične arterije (OAO), generalizirano okluzijo posteriornih ciliarnih arterij z relativno ohranjeno centralno retinalno arterijo (PCAO), okluzijo centralne retinalne arterije (CRAO), okluzijo veje retinalne arterije (BRAO), anteriorno ishemično optično nevropatijo (AION) ali posteriorno ishemično optično nevropatijo (PION). Periokularni zapleti vključujejo ptozo, oftalmoplegijo in nekrozo kože. Medtem ko periokularni simptomi običajno izzvenijo, je izboljšanje vidne funkcije redko. Najpogostejše oblike zdravljenja so bila subkutana aplikacija hialuronidaze, sistemski kortikosteroidi in intraarterijska trombolitična terapija, vendar nobeno ni bilo pomembno povezano z izboljšanjem vida. Prikazan je primer pacientke, zdravljene na Univerzitetnem kliničnem centru Ljubljana, ki je utrpela okluzijo oftalmične arterije, ptozo, oftalmoplegijo in kožno nekrozo po samoinjiciranju polnila v predel glabele.
ZAKLJUČEK: Čeprav velja, da je injiciranje dermalnih polnil varnejše in lažje nadzorovano kot klasične estetske operacije, je potrebna previdnost, da se izognemo vejam notranje karotidne arterije, predvsem pri posegih v predelu nosu in glabelarne gube; bolnike pa je treba opozoriti na možne zaplete.

PURPOSE: Dermal filler injection is commonly used to improve facial contours and lines. Although considered minimally invasive it can lead to devastating ocular complications. Our objective is to review severe ocular complications of soft tissue filler injection.
METHODS: Cases of the most severe ocular complitations after filler injections were reviewed from the literature and the archive of the Eye Hospital, University Medical Centre Ljubljana.
RESULTS: More than 500 cases of blindness have been reported in the literature since the start of the use of dermal filler injections. The sites that were highest risk were the nose, forehead and glabella. Depending on which artery is occluded, vision loss can be caused by ophthalmic artery occlusion (OAO), generalized posterior ciliary artery occlusion with relative central retinal artery sparing (PCAO), central retinal artery occlusion (CRAO), branch retinal artery occlusion (BRAO), anterior ischaemic optic neuropathy (AION), or posterior ischaemic optic neuropathy (PION). Periocular complications inlcude ptosis, ophthalmoplegia and skin necrosis. Improvement of visual acuity is extremely rare while periocular symptoms usually recover. The most common treatments were subcutaneous hyaluronidase, systemic steroids, and intraarterial thrombolytic therapy, however none were significantly associated with visual improvement. A female patient treated at UMC Ljubljana, who suffered from

ophthalmic artery occlusion, ptosis, ophthalmoplegia and skin necrosis after self-injection in the glabellar area, is reviewed.
CONCLUSION: Although dermal filler injections are considered safer and more easily controlled than conventional surgery, caution is necessary when performing nasal augmentation or glabellar wrinkle correction to avoid the branches of the internal carotid artery and patients should be advised of the possible complications.

HIALURONIDAZA IN INJEKCIJSKA POLNILA V PREDELU SOLZNEGA KANALA – KAJ VAM NE POVEDO

HYALURONIDASE AND INJECTABLES IN THE TEAR-THROUGH AREA-WHAT THEY DON'T TELL YOU

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ABSTRACT: Hyaluronidase is an enzyme that normally occurs in our body. It is also used in many different medical branches as a medical drug, one of them being aesthetic medicine. According to ISAPS, injectables (neurotoxins and fillers) are the number one facial treatment when it comes to aesthetic medicine. More often than not, both Botulinum toxins and fillers are used in the same area of the face. But what happens when you treat the tear-through area with Botulinum toxin and fillers and then need to inject hyaluronidase? What complications can you expect, and how to prevent or manage them to have an optimal and safe outcome for the patient. Purpose: Hyaluronidase is used to manage vascular and non-vascular complications, but it self can cause complications as well.
METHODS: Representation of a patient who was injected with injectables and then with hyaluronidase
RESULTS: The best results were met when combination of drugs was prescribed
CONCLUSION: In this lecture we will discuss not only the mechanisms of action that occur but also, besides applying cold compresses, giving massages and acetylsalicylic acids and antibiotics, what other drugs you should consider to minimise complications and have optimal and safe outcomes for your patient.

MREŽNICA

RETINA

MREŽNICA – KLINIČNO IN RAZISKOVALNO DELO, VIZIJA RAZVOJA

RETINAL CLINIC - CLINICAL AND RESEARCH WORK, VISION FOR DEVELOPMENT

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V zadnjih dveh desetletjih smo na področju mrežnice priča skokovitemu razvoju diagnostičnih in terapevtskih možnosti. Najpomenbnejši terapevtski preboj predstavlja intravitrealna farmakoterapija, ki je zaradi vse večjega števila bolnikov in novih indikacij velik strokovni in organizacijski izziv. S povezovanjem centrov, ki se v Sloveniji ukvarjajo z mrežnico, težimo k enotnemu pristopu, ki sledi aktualnim smernicam v svetu. Odpirajo se tudi nova raziskovalna vprašanja, ki jih rešujemo tako v našem prostoru kot tudi z vključevanjem v evropske in globalne projekte.

The last two decades have witnessed a leap in the development of diagnostic and therapeutic options in the field of retina. The most important therapeutic breakthrough is intravitreal pharmacotherapy, which is a major professional and organisational challenge due to the increasing number of patients and new indications. By bringing together the retinal centres in Slovenia, we are striving for a unified approach that follows current guidelines worldwide. New research questions are also being raised, which we are addressing both in our own area and through involvement in European and global projects.

UMETNA INTELIGENCA PRI BOLEZNIH MREŽNICE

ARTIFICIAL INTELLIGENCE IN RETINAL DISEASES

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NAMEN: Umetna inteligenca (UI) ima pomembno vlogo pri oftalmološki obravnavi bolnikov z boleznimi mrežnice. S svojo zmožnostjo avtomatiziranega presejanja, natančne diagnostike in optimiziranega načrtovanja zdravljenja glede na prognozo lahko pripomore k izboljšanju klinične obravnave ter izidov zdravljenja.
METODE: Pregled algoritmov UI, ki so že v rutinski klinični uporabi ter potencialnih izzivov pri obravnavi bolezni mrežnice s pomočjo UI.
REZULTATI: Največ algoritmov UI je na voljo za analizo slik očesnega ozadja v presajalnih programih za diabetično retinopatijo (DR), s pomočjo katerih se odkrivajo za vid ogrožujoča stanja, ki zahtevajo nadaljnjo diagnostiko ter zdravljenje. Presejalni programi za DR osnovani na UI imajo pomembno vlogo tudi v predelih sveta, v katerih je slabša dostopnost do zdravstvene oskrbe. Algoritmi UI na podlagi analize slik očesnega ozadja in optične koherentne tomografije (OCT), ki se uporabljajo za presejanje in določitev stopnje starostne degeneracije makule (SDM), napovedujejo tveganje za napredovanje v neovaskularno SDM, zaznajo pojav nove neovaskularizacije v makuli, kvantificirajo druze, izmerijo geografsko atrofijo in napovejo izid zdravljenja z zaviralci VEGF - z različno stopnjo občutljivosti in specifičnosti. UI lahko omogoči napoved poteka bolezni ter pripomore k odločanju o začetku in nadaljevanju zdravljenja z zaviralci VEGF, kar optimizira stroške zdravstvene obravnave, skrajšuje čakalne dobe ter omogoča personalizirano obravnavo bolnikov. Omejitve pri uporabi UI so predvsem učinkovitost algoritma, njegova občutljivost in specifičnost, ki sta odvisni od raznolikosti in kakovosti podatkov s katerimi treniramo model ter potreba po klinični validaciji. Izziv pri uporabi algoritmov UI so tudi zakonodajne omejitve in integracija v klinično prakso.
ZAKLJUČEK: Uporaba UI prispeva k zgodnjemu odkrivanju patoloških sprememb mrežnice in s tem k zmanjšanju tveganja za nepovratno poslabšanje vida in slepoto, s čimer se izboljša kakovost življenja bolnikov. Integracija UI v klinično prakso lahko optimizira zdravstvene procese, skrajša čakalne dobe in poveča dostopnost oftalmološke oskrbe.

PURPOSE: Artificial intelligence (AI) plays an important role in the ophthalmic management of patients with retinal diseases. With its ability of automate screening, accurate diagnostics, and optimizing treatment based on prognosis, AI can contribute to the improvement of clinical care and treatment outcomes.
METHODS: Review of AI algorithms that are already in routine clinical use and potential challenges in the management of retinal diseases using AI.
RESULTS: Most AI algorithms are available for analyzing fundus images in screening programs for diabetic retinopathy (DR), which help detect vision-threatening conditions that require further diagnostics and treatment. AI-based DR screening programs also play an important role in parts of the world where access to healthcare is limited. AI algorithms analyzing fundus images and optical coherence tomography (OCT) are used for screening and staging age-related macular degeneration (AMD), predicting the risk of progression to neovascular AMD, detecting new neovascularization in the macula, quantifying drusen, measuring geographic atrophy, and predicting treatment outcomes with VEGF inhibitors—with varying degrees of sensitivity and specificity. AI can enable disease course prediction and assist in decisions regarding the initiation and continuation of treatment with VEGF inhibitors, which optimizes healthcare costs, shortens waiting times, and enables personalized patient care. The limitations of AI use primarily involve algorithm effectiveness, sensitivity, and specificity, which depend on the diversity and quality of the data used to train the model, as well as the need for clinical validation. Challenges in using AI algorithms also include legal restrictions and integration into clinical practice.
CONCLUSION: The use of AI contributes to the early detection of pathological changes in the retina, thus reducing the risk of irreversible vision loss and blindness, thereby improving patients' quality of life. Integrating AI into clinical practice can optimize healthcare processes, shorten waiting times, and increase access to ophthalmic care.

IZKUŠNJE OČESNE KLINIKE LJUBLJANA Z ZDRAVLJENJEM Z 8MG EYLEA

EXPERIENCES OF THE LJUBLJANA EYE CLINIC WITH TREATMENT USING 8MG EYLEA

Darja Dobovšek Divjak
Sponsored by Bayer, Germany

INDIKACIJE ZA LASERSKO TERAPIJO PERIFERNIH PATOLOŠKIH SPREMEMB V MREŽNICI

INDICATIONS FOR LASER THERAPY OF PERIPHERAL PATHOLOGICAL CHANGES IN THE RETINA

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NAMEN: predstavitev manjše incidence regmatogenega odstopa mrežnice oziroma napredovanja retinoshize po laserskem zdravljenju.
METODE: naše izkušnje in podatki iz literature o laserski fotokoagulaciji horioretine zaradi raztrganin in foramnov mrežnice, palisadnih, snail track in retinal tuft degeneracij ter degenerativnih retinoshiz.
REZULTATI: pri simptomatski podkvasti rupturi, travmatski rupturi ali dializi brez ali z manjšim okolnim dvigom mrežnice je potrebno nujno opraviti laserski poseg. Opravimo ga tudi pri starejši rupturi ali perifernem foramnu mrežnice s privzdignjenimi robovi ali lokalnim odstopom mrežnice. Periferni foramen mrežnice, asimptomatska podkvasta ruptura mrežnice z okolnim pigmentom in/ali z ležečim robom niso indikacije za poseg. Palisadna degeneracija brez ali z perifernimi ali atrofičnimi foramni mrežnice je po odstopu steklovine redko vzrok regmatogenega odstopa mrežnice. Lasersko zdravljenje je potrebno le v primeru izrazite trakcije steklovine. Snail track ter cistična ali zonularna retinal tuft degeneracija imajo pri odstopu steklovine majhno incidenco nastanka podkvaste raztrganine mrežnice in se laserski poseg v teh primerih opravi podobno kot pri palisadni degeneraciji. Visoka kratkovidnost, Marfanov, Sticklerjev ali Ehlers-Danlosov sindrom, familiarna predispozicija za odstop mrežnice in podkvasta ruptura ali regmatogeni odstop mrežnice v drugem očesu so dodatni rizični dejavniki za regmatogeni odstop mrežnice, zato moramo v primeru omenjenih degeneracij opraviti laserski poseg. Podobno ga v teh primerih opravimo tudi pred operacijo katarakte in pri nekaterih drugih posegih v sprednjem segmentu očesa. Pri ostali populaciji laserski poseg ne zmanjša možnosti odstopa mrežnice v naslednjih mesecih po operativnem posegu. Laserski poseg pri degenerativni retinoshizi ne ustavi napredovanja bolezni. Če sega v bližino žilnih lokov, naredimo markacijski rob za oceno napredovanja bolezni. Ostale degenerativne spremembe v mrežnici (white-without-pressure, white-with-pressure, snowflake, pearl in paving stone degeneracija) niso indikacija za preventivno lasersko zdravljenje.
ZAKLJUČEK: indikacija za laserski poseg pri omenjenih spremembah mrežnice je različna glede na vrsto obolenja in dodatne rizične dejavnike. Pred napotitvijo na laserski poseg je potrebna natančna anamneza in pregled očesnega ozadja ter upoštevanje priporočil.

PURPOSE: presentation of a lower incidence of rhegmatogenous retinal detachment or progression of retinoschisis after laser treatment.
METHODS: our experience and data from the literature about chorioretinal laser photocoagulation due to retinal tears and foramen, palisade, snail track, and retinal tuft degenerations and degenerative retinoschisis.
RESULTS: In the case of symptomatic horseshoe tear, traumatic tear, or dialysis without or with minor surrounding retinal detachment, laser intervention is urgently required. It is also performed for older tears or peripheral retinal foramen with raised edges or local retinal detachment. Peripheral retinal foramen and asymptomatic horseshoe retinal tear with surrounding pigment and/or a lying edge are not indications for tretment. Palisade degeneration without or with peripheral or atrophic retinal foramen is rarely the cause of rhegmatogenous retinal detachment after vitreous detachment. Laser treatment is only necessary in cases of severe vitreous traction. Snail track and cystic or zonular retinal tuft degeneration have a low incidence of rhegmatogenous retinal detachment in vitreous detachment, and laser treatment in these cases is performed similarly to palisade degeneration. High myopia, Marfan, Stickler, or Ehlers-Danlos syndrome, familial predisposition to retinal detachment, and horseshoe tear

or rhegmatogenous retinal detachment in the other eye are additional risk factors for rhegmatogenous retinal detachment, which is why laser treatment must be performed in the case of the aforementioned degenerations. Similarly, it is performed in these cases before cataract surgery and for some other procedures in the anterior segment of the eye. In the rest of the population, laser treatment does not reduce the possibility of retinal detachment in the months following surgery. Laser treatment in degenerative retinoschisis does not stop the progression of the disease. If it extends near the retinal vascular arches, a marking edge is made to assess the progression of the disease. Other degenerative changes in the retina (white-without-pressure, white-with-pressure, snowflake, pearl, and paving stone degeneration) are not an indication for preventive laser treatment.
CONCLUSION: The indication for laser intervention in the aforementioned retinal changes varies depending on the type of disease and additional risk factors. Before referring for laser treatment, a detailed history and examination of the fundus are required, and recommendations must be followed.

SUSACOV SINDROM - PRIKAZ KLINIČNEGA PRIMERA

SUSAC SYNDROME - A CASE REPORT

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47-letna pacientka z znano obojestransko senzorinevralno naglušnostjo in encefalopatijo (težave s kognicijo in motnjami razpoloženja), je bila prvič pregledana pri oftalmologu zaradi poslabšanja vida na desno oko. Ugotovljen je bil izpad v spodnji polovici desnega vidnega polja in zaporo zgornje veje mrežnične arterije desno, ob relativno dobri vidni ostrini desno in normalnem barvnem vidu. Fluoresceinska angiografija je pokazala večje akapilarno področje desno po zapori zgornje veje mrežnične arterije in obojestransko številne segmentno okludirane arteriole z barvanjem žilne stene oziroma puščanjem kontrasta. Glede na fluoresceinsko angiografijo in pridruženimi sistemskimi znaki – encefalopatijo in izgubo sluha, pa je bila potrjena diagnoza Susac sindroma, ki je bila skladna tudi z MRI lezijami v možganovini. Nevrologi so začeli z intenzivno imunosupresivno in antiagregacijsko terapijo. Pacientka je opravila več kontrolnih fluoresceinskih angiografij s fazami izboljšanja in poslabšanja avaskularnih področij in področij puščanja kontrasta. Ob sistemski kortikosteroidni terapiji je prišlo do katarakte in sekundarnega glavkoma. Potrebna je bila operacija sive mrene obojestransko. Ob lokalni antiglavkomski terapiji, pa je očesni pritisk urejen. Po 4 letih je pacientkino stanje stabilno, trenutno je zdravljena z vzdrževalnimi odmerki intravenskih imunoglobulinov na 4 tedne, redno se spremlja z MRI glave, audiometrijo in flouresceinskimi angiografijami, ki pa še vedno pokažejo posamezna akapilarna področja in področja puščanja kontrasta. Za prognozo Susak sindroma je ključno zgodnje in agresivno imunosupresivno zdravljenje, bolezen pa lahko, kljub terapiji, povroči trajne posledice – izguba sluha ali vida. Susak sindrom je avtoimunska mikroangiopatija, ki se kaže s prizadetostjo možganov, mrežnice in notranjega ušesa. Gre za disfunkcijo centralnega živčnega sistema, zaporo vej mrežničnih arterij in senzorinevralno izgubo sluha. Potrebno je agresivno imunosupresivno zdravljenje, hkrati pa multidisciplinarni pristop več vrst specialnosti - oftalmologija, nevrologija, otorinolaringologija.

47-years old patient with known billateral sensorineural hearing loss and central nervous system dysfunction (cognitive impairment and emotional disturbance), was seen by an ophthalmologist for the first time due to visual disturbances in the right eye. The examination showed inferior visual field defect and in the right eye and occlusion of the right superior branch of the central retinal artery with relatively good visual acuity and normal colour vision. Fluorescein angiography showed large acapillary area in the right eye corresponding to the superior branch retinal artery occlusion and signs of bilateral numerous segmentally occluded arterioles and areas of contrast leakage. Based on fluorescein angiography and known accompanying systemic signs – encephalopathy and hearing loss, the diagnosis of Susac syndrome was confirmed, along with MRI lesions of the brain. Neurologists started with aggressive immunosuppressive and antiplatelet therapy. The patient had numerous fluorescein angiographies performed in the following years with phases of improvement and deterioration of avascular areas and areas of contrast leakage. As a consequence of systemic corticosteroid therapy, cataract and secondary glaucoma developed. She had cataract surgery in both eyes and has intraocular pressure lowering medications, after which the pressure normalized. After 4 years of follow up, the patient condition is stabile. She is receiving intravenous immunoglobulins every 4 weeks and is regularly followed with MRI of the brain, audiometry and fluorescein angiography, which still shows small acapillary areas and contrast leakage. The prognosis of the Susac syndrome depends on early and aggressive immunosuppressive treatment. In rare cases, the condition can cause permanent complications like vision and hearing loss. Susac syndrome is autoimmune microangiopathy affecting the brain, retina and inner ear. Diagnosis is based on the presence of the clinical triad of central nervous system dysfunction, branch retinal artery occlusions and sensorineural hearing loss. Patients are treated with aggressive immunosuppressive agents and multidisciplinary approach is necessary - a good cooperation between ophthalmology, neurology and ear nose throat specialty.

OBOJESTRANSKA FOVEOMAKULARNA SHIZA PRI NEKRATKOVIDNI BOLNICI

BILATERAL FOVEOMACULAR SCHISIS IN NON-MYOPIC WOMAN

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54 – letna bolnica je bila napotena zaradi naključno ugotovljene makulopatije obojestransko. Z ustrezno korekcijo je bila vidna ostrina obojestransko 1,0 po Snellenu (korekcija desno +2,75 sph, levo + 3,25 sph). Klinično ob pregledu sprednjega in zadnjega očesnega segmenta večjih posebnosti nismo ugotavljali. Na OCT makul so bile v fovei vidne cistoidne spremembe (shiza) v zunanjih slojih mrežnice, ki so se širile proti temporalno. Opravili smo fluoresceinsko angiografijo, elektrofiziologijo, biometrijo in genetske preiskave. Obstajajo različni vzroki makulopatij, pri katerih se pojavi foveoshiza: kongenitalna X-vezana retinoshiza (mutacija v genu RS1), miopična foveoshiza, optic disc pit makulopatija, retinitis pigmentosa, glavkom, vitreomakularna trakcija, medikamentozno povzročena foveoshiza, idiopatska foveoshiza (SNIFR – stelatna ne-dedna idiopatska foveomakularna retinoshiza). Zdravljenje foveoshize je odvisno od bolnikovih težav ali morebitnih drugih zapletov, povezanih z retinoshizo. Pri asimptomatskih bolnikih se odločimo za letno spremljanje, pri zapletih pa pride v poštev zdravljenje z vitrektomijo.

A 54-year-old female patient was referred due to incidental finding of bilateral maculopathy. Her best-corrected visual acuity was 1.0 bilaterally according to the Snellen chart (with correction RE +2.75 sph, LE +3.25 sph). Clinicall examination of anterior and posterior segments of the eye did not reveal any significant findings. Optical coherence tomography (OCT) of the macula revealed cystoid changes (schisis) in the outer retinal layers, extending temporally from the fovea. Fluorescein angiography, electrophysiology, biometry and genetic testing was conducted. There are various causes of maculopathy associated with foveoschisis, including congenital X-linked retinoschisis (mutation in the RS1 gene), myopic foveoschisis, optic disc pit maculopathy, retinitis pigmentosa, glaucoma, vitreomacular traction, medication-induced foveoschisis and idiopathic foveoschisis (SNIFR – stellate non-hereditary idiopathic foveomacular retinoschisis). The treatment of foveoschisis depends on the patient's symptoms or any potential complications associated with retinoschisis. In asymptomatic patients we opt for annual monitoring, whereas in complicated cases pars plana vitrectomy may be considered.

PRESEJALNI PROGRAM DIABETIČNE RETINOPATIJE V SPLOŠNI BOLNIŠNICI DR. FRANCA DERGANCA NOVA GORICA

DIABETIC RETINOPATHY SCREENING IN GENERAL HOSPITAL DR. FRANC DERGANC NOVA GORICA

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NAMEN: Pregled izvajanja presejalnega programa diabetične retinopatije v Splošni bolnišnici dr. Franca Derganca Nova Gorica.
METODE: Retrospektivna analiza dokumentacije vseh bolnikov, ki so bili vključeni v program presejanja diabetične retinopatije na Očesnem oddelku Splošne bolnišnice dr. Franca Derganca Nova Gorica v času od oktobra 2023 do februarja 2025.
REZULTATI: Predstavljeni bodo naslednji podatki: analiza napotnih zdravnikov in regij, iz katerih izhajajo napoteni bolniki, vrsta sladkorne bolezni, trajanje sladkorne bolezni, urejenost sladkorne bolezni, pridružene bolezni, ugotovljena stopnja diabetične retinopatije in prisotnost diabetičnega makularnega edema, delež napotitev na klinični oftalmološki pregled oz. diagnostične postopke ali druge napotitve ter pregled vzrokov za te napotitve.
ZAKLJUČEK: Rezultati retrospektivne študije bi lahko prispevali k optimizaciji in učinkovitejši strategiji izvajanja presejalnega programa diabetične retinopatije. Presejanje diabetične retinopatije je ključno za zgodnje in pravočasno odkrivanje bolnikov s sladkorno boleznijo, ki potrebujejo takojšnje zdravljenje vid ogrožajoče diabetične retinopatije in s tem preprečuje izgube vida zaradi sladkorne bolezni.

PURPOSE: Review of the implementation of the diabetic retinopathy screening program at the General Hospital dr. Franc Derganc Nova Gorica.
METHODS: Retrospective study of the documentation of all patients who were included in the diabetic retinopathy screening program at the Eye Department of the General Hospital dr. Franc Derganc Nova Gorica between October 2023 and February 2025.
RESULTS: The following data will be presented: analysis of referring physicians and regions from which referred patients originate, type of diabetes, duration of diabetes, glycaemic management, associated diseases, detected stages of diabetic retinopathy and presence of diabetic macular edema, referral rate to clinical ophthalmological exam or diagnostic procedures or other referrals and a review of the reasons for these referrals.
CONCLUSION: The results of the retrospective study could contribute to the optimization and more effective implementation strategy of the diabetic retinopathy screening program. Screening for diabetic retinopathy is key to early and timely detection of patients with diabetes who need immediate treatment for vision-threatening diabetic retinopathy, thereby preventing vision loss due to diabetes.

SISTEMATIČEN PREGLED TOKSIČNOSTI SISTEMSKE TERAPIJE ZA MREŽNICO IN ŽILNICO

SYSTEMATIC REVIEW OF RETINAL AND CHOROIDAL TOXICITY ASSOCIATED WITH SYSTEMIC THERAPY

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NAMEN: Podati celovit pregled sistemskih zdravil, ki lahko povzročijo različne vzorce toksičnosti za mrežnico in žilnico.
METODE: Predstaviti klinične značilnosti in mehanizem toksičnosti na mrežnico in žilnico ter priporočila glede oftalmološkega spremljanja bolnikov na terapiji in ukrepanja ob pojavu z zdravili povzročene okvare s prikazom primerov bolnikov, ki so bili obravnavani na Očesni kliniki Univerzitetnega kliničnega centra Ljubljana.
REZULTATI: Hidroksiklorokin in pentozan polisulfat sta toksična za pigmentni epitelij mrežnice, zapora mrežničnih žil je opisana pri uporabi oralnih kontraceptivov, medtem ko se lahko cistoidni makularni edem pojavi pri uporabi fingolimoda, nikotinske kisline, sulfonamidih, taksanih in glitazonih. Kristalna retinopatija je povezana s tamoksifenom. Novejša zdravila, vključno z zaviralci tirozin-kinaze, MEK/BRAF zaviralci in zaviralci imunskih nadzornih točk, so povezani z različnimi neželenimi učinki, kot je uveitis.
ZAKLJUČKI: Toksičnost sistemskih zdravil na mrežnico in žilnico se kaže z različnimi kliničnimi in slikovnimi značilnostmi. Spremljanje očesnih toksičnih manifestacij sistemskih zdravil ni pomembno le za preprečevanje ireverzibilnih okvar vida in izboljšanje izida sistemskega zdravljenja, temveč lahko igra ključno vlogo tudi pri usmerjanju in izbiri sistemske terapije. Pravočasno prepoznavanje teh zapletov omogoča prilagoditev ali zamenjavo terapije, kar ne vpliva zgolj na sistemsko stanje bolnika, temveč je pri onkoloških zdravilih lahko odločilno tudi za preživetje.

PURPOSE: To provide a comprehensive review of systemic medications that may induce different patterns of retinal and choroidal toxicity.
METHODS: We review current recommendations for ophthalmic monitoring and management strategies for drug-induced retinal and choroidal toxicity, as well as the underlying mechanisms and phenotypic manifestations, illustrated by case studies of patients treated at the Eye Hospital of the University Medical Centre Ljubljana.
RESULTS: Hydroxychloroquine and pentosan polysulfate are toxic to the retinal pigment epithelium. Retinal vascular occlusion has been reported with oral contraceptives, while cystoid macular edema may occur with fingolimod, nicotinic acid, sulfa drugs, taxanes, and glitazones. Crystalline retinopathy has been associated with tamoxifen. Newer systemic therapies, including tyrosine kinase inhibitors, MEK/BRAF inhibitors, and immune checkpoint inhibitors, are associated with various related adverse events such as uveitis.
CONCLUSIONS: Drug-induced retinal and choroidal toxicities present with diverse clinical and imaging features, requiring a thorough history, clinical examination and multimodal imaging for accurate diagnosis. Monitoring ocular toxicity from systemic drugs is crucial not only for preventing irreversible vision loss and optimizing systemic therapy outcomes but also for guiding treatment selection. Early detection of these complications enables timely adjustments or therapy modifications, impacting not only the patient's overall systemic condition but, in the case of oncology drugs, potentially influencing survival.

ANALIZA BRALNIH SPOSOBNOSTI IN OČESNIH GIBOV PRI OSEBAH S SLABOVIDNOSTJO ZARADI STAROSTNE DEGENERACIJE MAKULE Z EKSCENTRIČNO FIKSACIJO

ANALYSIS OF READING ABILITIES AND EYE MOVEMENTS IN PEOPLE WITH LOW VISION DUE TO AGE-RELATED MACULAR DEGENERATION WITH ECCENTRIC FIXATION

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NAMEN: Preučiti bralne sposobnosti in očesne gibe pri osebah s slabovidnostjo zaradi starostne degeneracije makule (SDM) z ekscentrično fiksacijo z uporabo tehnike sledenja očem.
METODE: Pri 17 bolnikih z obojestransko SDM (7 moških; povp. starost 77,5 ± 6,0 let) in 16 zdravih kontrolah (10 moških; povp. starost 72,2 ± 6,0 let) smo ovrednotili bralne sposobnosti - bralno vidno ostrino, hitrost branja (MNREAD-SI) in kontrastno občutljivost (Pelli-Robson). Z mikroperimetrijo (NIDEK MP-3) smo določili lokacijo PRL in stabilnost fiksacije. Vsi preiskovanci so opravili optično koherentno tomografijo in avtofluorescenco makule in določitev fiksacije na MP-3. S Tobii Glasses Pro 2 smo primerjali očesne gibe med skupinama.
REZULTATI: Bolniki s SDM so imeli slabšo bralno vidno ostrino ($p < 0,001$), počasnejše branje ($p < 0,001$) in nižjo kontrastno občutljivost ($p < 0,001$). PRL je bil pri večini bolnikov v zgornjem kvadrantu glede na foveo, fiksacija je bila stabilna pri 8, relativno nestabilna pri 7 in nestabilna pri 2 bolnikih. V kontrolni skupini je bila fiksacija stabilna v fovei. Med skupinama je izstopala je razlika v številu sakad.
ZAKLJUČEK: Ugotovitve lahko prispevajo k razumevanju prilagoditev branja pri osebah s SDM in k razvoju rehabilitacijskih strategij.

PURPOSE: To investigate reading skills and eye movements in people with visual impairment due to age-related macular degeneration (AMD) with eccentric fixation using an eye-tracking technique.
METHODS: Overall, 17 patients with bilateral AMD (7 males; mean age 77.5 ± 6.0 yrs) and 17 healthy controls (10 males; mean age 72.2 ± 6.0 yrs) were evaluated for reading skills – reading visual acuity, reading speed (MNREAD-SI), and contrast sensitivity (Pelli-Robson). The location of the PRL and the stability of the fixation were determined by microperimetry (NIDEK MP-3). All subjects underwent optical coherence tomography, autofluorescence, and fixation determination on MP-3. Eye movements were compared between the two groups using Tobii Glasses Pro 2.
RESULTS: SDM patients had worse reading visual acuity ($p < 0.001$), slower reading ($p < 0.001$), and lower contrast sensitivity ($p < 0.001$). PRL was in the upper quadrant relative to the fovea in the majority; fixation was stable in 8, relatively unstable in 7, and unstable in 2 patients. In the control group, fixation was stable in the fovea. There was a difference in the number of saccades.
CONCLUSION: The findings may contribute to understanding reading adaptations in people with SDM and developing rehabilitation strategies.

ZDRAVLJENJE BOLEZNI MREŽNICE – KJE SO MEJE?

PUSHING THE BOUNDARIES OF RETINAL TREATMENTS

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MANJ APLIKACIJ, VEČ PROSTORA: ZDRAVILO VABYSMO KOT REŠITEV ZA PREZASEDENOST AMBULANT

FEWER APPLICATIONS, MORE SPACE: VABYSMO AS A SOLUTION FOR OUTPATIENT OVERCROWDING

Yousif Subhi
Sponsored by Roche, Slovenia

UVEITIS IN TUMORJI

UVEITIS AND TUMORS

UVEITIS: KJE SMO IN KAM GREMO – SODOBNA PRAKSA, RAZNOLIKOST PRISTOPOV IN POGLED V PRIHODNOST

UVEITIS: WHERE WE ARE AND WHERE WE ARE GOING - CONTEMPORARY PRACTICE, DIVERSITY OF APPROACHES AND A LOOK TO THE FUTURE

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Uveitis je pomemben vzrok za izgubo vida in kljub pogostosti ostaja področje številnih izzivov v diagnostiki in zdravljenju. Rezultati nacionalne ankete med slovenskimi oftalmologi razkrivajo raznolikost pristopov, izpostavljenost zdravnikov in potrebo po večji strokovni usmeritvi. Predavanje bo povezalo te vpoglede z aktualnim razvojem na področju personalizirane diagnostike, vključno z biomarkerji in mikrobiomom, ter sodobnimi imunomodulatornimi zdravili. S tem bomo odprli prostor za razmislek o prihodnjih smernicah in interdisciplinarnem sodelovanju.

Uveitis is an important cause of vision loss and, despite its frequency, remains an area of many challenges in diagnosis and treatment. The results of a national survey of Slovenian ophthalmologists reveal a diversity of approaches, exposure of doctors and a need for more professional direction. This lecture will link these insights with current developments in personalised diagnostics, including biomarkers and the microbiome, and modern immunomodulatory drugs. This will open the floor for reflection on future directions and interdisciplinary collaboration.

ONKRAJ KLINIČNIH MERIL: ANGIOGRAFSKA DIFERENCIACIJA OČESNE TUBERKULOZE IN SARKOIDOZE Z UPORABO POLAVTOMATIZIRANE KVANTITATIVNE ANALIZE

BEYOND CLINICAL CRITERIA: ANGIOGRAPHIC DIFFERENTIATION OF OCULAR TUBERCULOSIS AND SARCOIDOSIS USING SEMI-AUTOMATED QUANTITATIVE ANALYSIS

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PURPOSE: Definitive diagnosis of ocular sarcoidosis (OS) and ocular tuberculosis (OTB) remains challenging despite established clinical criteria, testing protocols, and imaging techniques. These conditions often present with overlapping features that complicate differentiation. While fundus fluorescein angiography (FA) is widely used as a diagnostic adjunct, no standardized quantitative grading systems currently exist to provide objective endpoints. Our study aimed to quantify specific FA imaging characteristics to identify potential biomarkers that could enhance diagnostic accuracy through automated analysis.
METHODS: Patients diagnosed with OS and OTB affecting retinal vessels who presented to Manchester Royal Eye Hospital's Uveitis Service between 2016-2022 were identified. Patient selection followed established diagnostic criteria. This was followed by a semi-automated quantitative analysis: ultra-widefield FA (UWF-FA) images were manually delineated using MatLab® to analyze various parameters including: total image area, vasculitis zones (number, length, location), ischemic zones (number, area, location) both inside and outside the arcade, foveal avascular zone (FAZ) area, and leakage patterns. Statistical analysis compared these features between OS and OTB groups using Student's t-test with significance set at $p \leq 0.05$.
RESULTS: We analyzed 37 patients with OS (14 definite, 5 presumed, 18 probable; 32 percent female; mean age 43 years) and 35 patients with presumed OTB (51 percetnt female; mean age 49 years). Quantitative analysis revealed the average area of ischemic zones outside the arcade was significantly larger in OTB compared to OS (44.74 vs. 14.64 disc areas; $p=0.0018$). No other parameters demonstrated statistically significant differences between the groups, including vasculitis zone characteristics, ischemic zones inside the arcade, FAZ area, or leakage patterns on late-frame images.
CONCLUSION: This novel quantitative analysis of UWF-FA characteristics in OS and OTB identified peripheral non-perfusion as a potential distinguishing biomarker. OTB demonstrated significantly larger areas of peripheral ischemia compared to OS, providing an objective parameter that could enhance existing diagnostic criteria. This finding could be developed into an automated quantification algorithm and machine learning tool to aid differentiation between these clinically similar conditions. By identifying subtle angiographic patterns not apparent on routine clinical examination, this approach may improve diagnostic accuracy in challenging cases of posterior uveitis.

ZNAČILNOSTI BOLNIKOV Z OČESNIM SIFILISOM V SLOVENIJI: PREGLED 10-LETNEGA OBDOBJA, 2014-2024

CHARACTERISTICS OF PATIENTS WITH OCULAR SYPHILIS IN SLOVENIA: A 10-YEAR REVIEW (2014–2024)

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NAMEN: Opredelitev kliničnih značilnosti in načina obravnave bolnikov z očesnim sifilisom, vodenih na Očesni kliniki Univerzitetnega kliničnega centra Ljubljana v zadnjih 10 letih.
METODE: Iz medicinske dokumentacije smo retrospektivno identificirali vse bolnike, obravnavane med januarjem 2014 in decembrom 2024. Zabeležili smo njihove demografske in klinične podatke, vključujoč starost ob okužbi, klinično sliko, vidno ostrino, pridružene okužbe, potek obravnave in način zdravljenja ter jih ustrezno analizirali.
REZULTATI: Obravnavali smo 17 bolnikov (28 oči), 11 z obojestransko prizadetostjo. Med njimi je bilo 11 (64,7 %) moških in 6 (35,3 %) žensk. Pri 13 (76,5 %) so bile težave z očmi prvi simptom sifilisa. Mediana starosti ob diagnozi je bila 47 let (24-67 let), mediana začetne vidne ostrine pa 0,4 (0,001-1,0). Najpogosteje (64,3 % oči) je šlo za akutni sifilitični posteriorni plakoidni horioretinitis, redkeje za izolirani anteriorni (7,1 %) in intermediarni uveitis (7,1 %), nekrozo mrežnice (7,1 %), vaskulitis (7,1 %) ali optično nevropatijo (7,1 %) %). Presejalni test na sifilis v krvi je bil opravljen pri vseh obolelih: RPR je bil reaktiven pri 17/17 (100 %) in TPHA pri 17/17 (100 %) bolnikov. Pri 14 (82,4 %) je bil opravljen pregled likvorja: pri 11/14 (78,6 %) je bila prisotna pleocitoza, pri 11/14 (78,6 %) zvišane beljakovine, TPHA je bil pozitiven 8/14 (57,1 %). Štirje bolniki (23,5 %) so bili sočasno okuženi s HIV. Ena bolnica (5,9 %) je imela pridružen akutni hepatitis B, 1 bolnik pa kronični hepatitis C. 16 bolnikov (94,1 %) je bilo zdravljenih z benzilpenicilinom intravenozno, 1 (5,9 %) z benzatin penicilinom intramuskularno. 3 pacienti so prejeli dodatno sistemsko zdravljenje z metilprednizolonom zaradi slabe vidne ostrine. Bolnike smo v povprečju spremljali 17,6 mesecev. Mediana končne vidne ostrine je bila 0,9 (0,2 -1,0).
ZAKLJUČEK: Očesni sifilis je lahko vid ogrožujoče stanje. Najpogosteje se prezentira kot podtip uveitisa. Vsakega bolnika z intermediarnim/ posteriornim/ panuveitisom ter s kroničnim anteriornim uveitisom je potrebno testirati na sifilis. Vse paciente s sifilisom je potrebno testirati na HIV in ostale spolno prenosljive okužbe. Zgodnje odkrivanje in ustrezno zdravljenje lahko ohranita vid. Prognoza vida je ob ustreznem zdravljenju dobra.

PURPOSE: Analysis of clinical characteristics and management of patients with ocular syphilis examined at the Eye Hospital, University Medical Centre Ljubljana, over the last 10 years
METHODS: We conducted a retrospective review of medical records to identify all patients treated between January 2014 and December 2024. We collected demographic and clinical data, including age at diagnosis, clinical presentation, visual acuity, coexisting infections, disease progression, and treatment approach, and analysed them accordingly.
RESULTS: We treated altogether 17 patients (28 eyes), 11 of whom had bilateral involvement. Among them, 11 (64.7 %) were male and 6 (35.3 %) were female. In 13 patients (76.5 %), ocular symptoms were the first manifestation of syphilis. The median age at diagnosis was 47 years (range: 24–67 years), and the median initial visual acuity was 0.4 (range: 0.001–1.0). The most common presentation (64.3 % of eyes) was acute syphilitic posterior placoid chorioretinitis, followed by isolated anterior uveitis (7.1 %), intermediate uveitis (7.1 %), retinal necrosis (7.1 %), vasculitis (7.1 %), and optic neuropathy (7.1 %). A blood screening test for syphilis was performed in all patients: RPR was reactive in 17/17 (100 %) and TPHA was positive in 17/17 (100 %) patients. Cerebrospinal fluid was analyzed in 14 (82.4 %) patients, revealing pleocytosis in 11/14 (78.6 %) cases, elevated protein levels in 11/14 (78.6 %) cases, and positive TPHA in 8/14 (57.1 %) cases. Four patients (23.5 %) were co-infected with HIV. One patient (5.9 %) had acute hepatitis B and another one (5.9 %) chronic hepatitis C. 16 patients (94.1 %) were

treated with intravenous benzylpenicillin, while one (5.9 %) received intramuscular benzathine penicillin. Three patients received additional systemic treatment with methylprednisolone due to poor visual acuity. The average follow-up duration was 17.6 months. The median final visual acuity was 0.9 (range: 0.2–1.0).
CONCLUSION: Ocular syphilis is a vision-threatening condition that most commonly presents as a subtype of uveitis. All patients with intermediate, posterior, or panuveitis, as well as those with chronic anterior uveitis, should be tested for syphilis. Additionally, all syphilis patients should be screened for HIV and other sexually transmitted infections. Early detection and appropriate treatment can preserve vision, and the visual prognosis is favorable with proper management.

ENOSTRANSKI HORIORETINITIS - DOMNEVNA OČESNA TBC (PRIKAZ PRIMERA)

UNILATERAL CHORIORETINITIS - POSSIBLE INTRAOCULAR TUBERCULOSIS (A CASE PRESENTATION)

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41-letni bolnik je bil hospitaliziran oktobra 2024 zaradi akutnega, 2 dnevnega, poslabšanja vida desnega očesa. Šlo je za tujca, ki ni govoril slovenskega jezika in je bil trenutno v priporu (prihaja v spremstvu uniformiranih oseb). Ob enostranskem poslabšanju vidne ostrine je navajal še izrazito bolečino desnega očesa, ki se je širila v desno polovico obraza. Anamnestično je bivši odvisnik od i.v. drog, prejema terapijo z Metadonom, prav tako je v preteklosti prebolel hepatitis C. Na podlagi kliničnega pregleda in opravljenih multimodalnih preiskav mrežnice je bila postavljena diagnoza desnostranskega horioretinitisa (solitarna lezija). Klinična slika levega očesa je bila povsem v fizioloških mejah. Osnovna krvna slika je bila primerna, izstopala sta rahlo povišana SR in CRP. Vzorec prekatne vodice odvzet pri bolniku v lokalni anesteziji je bil, zaradi težkega sodelovanja bolnika, pičel, a so bile preiskave s pomočjo PCR na herpes viruse negativne. Izstopal je pozitiven kvantiferonski test. Negativne so bile hemokulture, preiskave na preostale viruse hepatitisa, HIV, sifilis in sarkoidozo. Šlo je za staro okužbo s B. henselae in B. burgdorferii, okužbe s T.gondii ni prebolel. RTG p/c ni kazal znakov infiltracij ali granulomatoznih sprememb. Opravljen je bil CT glave, kjer je bila ugotovljena neenakomerna zadebelitev stene očesnega zrkla v desnem očesu, vendar so bili rezultati ostalih preiskav, kot so CTA vratnega in možganskega žilja, brez posebnosti. Začetna terapija je vključevala empirično sistemsko protimikrobno zdravljenje, poleg tega tudi topikalno protivnetno terapijo. 4.dan po uvedbi terapije bolnik zavrača nadaljnjo hospitalizacijo. Ob odpustu 1.11.2024 je bil, glede na nejasno etiologijo in verjetno imunsko kompromitiranost bolnika, do prejetja vseh izvidov, ob protivnetnih zdravilih uveden sistemsko še metilprednizolon, kar je bilo kasneje postopno ukinjeno. Zaradi poslabšanja jetrne funkcije je bil preveden na terapijo s prednizolonom, po katerem so se vrednosti transaminaz ponovno normalizirale. Ugotavljali smo dober odziv na sistemsko terapijo s popolno regresijo spremembe na mrežnici in izboljšanjem vidne ostrine. Tekom zdravljenja se je večkrat postavilo vprašanje kemoprofilakse proti TBC ob dolgotrajnem jemanju sistemske kortikosteroidne terapije, vendar se pulmologi glede na verjetno latentno TBC za uvedbo tuberkulostatične terapije ne odločijo.

The 41-year-old male patient was hospitalized in October 2024 due to an acute, 2-day worsening of vision in the right eye. He was a foreigner who did not speak Slovenian and was currently in custody (arriving with uniformed personnel). Along with the unilateral deterioration of visual acuity, he reported about a significant pain in his right eye, which radiated to the right side of his face. His medical history included being a former intravenous drug user, currently receiving Methadone therapy and having previously had hepatitis C. Based on the clinical examination and multimodal imaging, the diagnosis of right-sided chorioretinitis (solitary granuloma) was made. The clinical presentation of the left eye was entirely within physiological limits. The basic blood count was appropriate with slightly elevated ESR and CRP. A sample of aqueous humor was taken from the patient under local anesthesia, but due to the patient's poor cooperation, the sample was small. However, PCR testing for herpes viruses was negative. A positive Quantiferon test was noted. Blood cultures, tests for other hepatitis viruses, HIV, syphilis, and sarcoidosis were negative. It was an old infection with Bartonella henselae and Borrelia burgdorferi and the patient had not had a Toxoplasma gondii infection. Chest X-ray showed no signs of infiltrates or granulomatous changes. A head CT scan revealed an uneven thickening of the scleral wall in the right eye, but the results of other investigations, such as CTA of the cervical and cerebral vessels, showed no significant findings. Initial therapy included empirical systemic antimicrobial treatment, along with topical anti-inflammatory therapy. On the 4th

day after the initiation of therapy, the patient refused further hospitalization. Upon discharge on November 1, 2024, due to the unclear etiology, the likely immune compromise and pending all test results, systemic treatment with methylprednisolone was started. Due to the worsening of his liver function, the patient was switched to prednisolone therapy, after which transaminase levels normalized. A good response to systemic therapy was observed, with regression of retinal changes and improved visual acuity. The question of chemoprophylaxis for tuberculosis was raised many times during the prolonged systemic corticosteroid therapy, but pulmonologists did not decide to initiate anti-tuberculosis treatment based on the likelihood of latent tuberculosis.

PERIFERNI ULCERATIVNI KERATITIS – OFTALMOLOŠKI IN REVMATOLOŠKI IZZIV

PERIPHERAL ULCERATIVE KERATITIS – OPHTHALMOLOGICAL AND RHEUMATOLOGICAL CHALLENGE

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NAMEN: Periferni ulcerativni keratitis (PUK) je ena najresnejših komplikacij revmatoidnega artritisa (RA) in napovedni dejavnik sistemskega vaskulitisa pri teh bolnikih. Namen prispevka je predstaviti očesne zaplete revmatoidnega artritisa na dveh kliničnih primerih bolnic s PUK, skleritisom in uveitisom.
METODE: 47-letna bolnica s seropozitivnim revmatoidnim artritisom je bila obravnavana zaradi rezajoče bolečine, pordelosti in fotofobije desnega očesa. Sprva prisotni intrastromalni roženični depoziti v nazalni in spodnji polovici roženice ob limbusu in neovaskularizacija limbusa so v dveh tednih napredovali v PUK. 42-letna bolnica s palindromnim revmatoidnim artritisom je bila obravnavana zaradi obojestranske rdečine in hude, predvsem nočne očesne bolečine. Ugotovljen je bil anteriorni nekrozantni skleritis s PUK-om predvsem zgoraj.
REZULTATI: Prva bolnica je bila uvodoma zdravljena s pulzi intravenskega metilprednizolona, vendar za umiritev vnetja to ni zadostovalo, z revmatologi smo se uskladili za zdravljenje s tocilizumabom in s humanimi imunoglobulini, kar je vodilo do umiritve vnetja. Tudi druga bolnica je bila zdravljena s pulzi metilprednizolona in in z metotreksatom, po čemer se je vnetje umirilo, vendar je v naslednjem letu prišlo do ponovitve, ob tem se je pojavil intermediarni uveitis. Zdravljenje z adalimumabom je bilo neuspešno, po uskladitvi z revmatologi je bila uvedena terapija z rituksimabom, ki je privedla do remisije.
ZAKLJUČEK: PUK je lahko uničujoč zaplet revmatoidnega artritisa (RA), ki lahko povzroči hitro taljenje roženice s perforacijo in izgubo vida. Je napoved sistemskega vaskulitisa z visoko stopnjo smrtnosti, če ni agresivno zdravljen. Pomembno je hitro prepoznavanje in multidisciplinarno zdravljenje v sodelovanju z revmatologi, saj pravočasna uvedba ustrezne terapije lahko prepreči nepopravljive očesne in sistemske posledice.

PURPOSE: Peripheral ulcerative keratitis (PUK) is one of the most serious complications of rheumatoid arthritis (RA) and a prognostic factor for systemic vasculitis in these patients. Our aim is to present ocular complications of rheumatoid arthritis in two clinical cases of patients with PUK, scleritis and uveitis.
METHODS: A 47-year-old female patient with seropositive rheumatoid arthritis was treated for pain, redness and photophobia of the right eye. The initial intrastromal corneal deposits in the nasal and lower half of the cornea near the limbus and neovascularization of the limbus progressed to PUK within two weeks. A 42-year-old female patient with palindromic rheumatoid arthritis was treated for bilateral redness and severe, mainly nocturnal ocular pain. Anterior necrotizing scleritis with PUK, mainly superior, was diagnosed.
RESULTS: The first patient was treated with pulses of intravenous methylprednisolone, but this was not sufficient for the inflammation to subside. We coordinated further treatment with the rheumatologists and patient received tocilizumab and human immunoglobulins, which led to the resolution of the inflammation. The second patient was treated with pulses of intravenous methylprednisolone and methotrexate, the inflammation subsided but recurred the following year, with the development of intermediate uveitis. Treatment with adalimumab was unsuccessful and after coordination with the rheumatologists, rituximab therapy was introduced and led to remission.
CONCLUSION: PUK can be a devastating complication of RA, which can cause rapid corneal melting with perforation and loss of vision. It is a predictor of systemic vasculitis, which carries a high mortality rate if not aggressively treated. Prompt recognition and multidisciplinary treatment in collaboration with rheumatologists is important, as the timely introduction of appropriate therapy can prevent irreversible ocular and systemic sequelae.

PRIMARNI VITREORETINALNI LIMFOM: DIAGNOSTIČNI IZZIVI IN POMEN ZGODNJEGA PREPOZNAVANJA

PRIMARY VITREORETINAL LYMPHOMA: DIAGNOSTIC CHALLENGES AND THE IMPORTANCE OF EARLY RECOGNITION

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UVOD: Primarni vitreoretinalni limfom (PVRL) je redka, agresivna znotrajočesna neoplazma, ki pogosto simulira uveitis, kar otežuje diagnozo. Klinične manifestacije so nespecifične, kar vodi v zamude pri prepoznavanju bolezni.
METODE: Opravili smo retrospektivno analizo vseh primerov PVRL v Sloveniji (2013–2024) ter pregledali literaturo o klinični sliki, diagnostičnih pristopih in možnostih zdravljenja.
REZULTATI: naša populacijska, retrospektivna študija je zajela 13 bolnikov s PVRL. Povprečna starost bolnikov ob diagnozi je bila 75 let, pri čemer so zbolevale predvsem ženske (69 %). Najpogostejši simptomi so bili zamegljen vid (85 %) in plavajoče motnjave (62 %). Mediana časa do diagnoze je znašala 7 mesecev. Vsi primeri so bili potrjeni z biopsijo steklovine/mrežnice. Pri 36 % bolnikih je prišlo do prizadetosti osrednjega živčnega sistema. Pregled literature je poudaril heterogenost kliničnih manifestacij in pomen občutljivih diagnostičnih metod.
ZAKLJUČEK: PVRL ostaja diagnostični izziv zaradi svoje spremenljive klinične slike. Večja ozaveščenost vodi k zgodnješemu postavljanju suma na PVRL in s tem tudi k hitrejšemu začetku zdravljenja.

INTRODUCTION: Primary vitreoretinal lymphoma (PVRL) is a rare, aggressive intraocular neoplasm that often simulates uveitis, making diagnosis difficult. Clinical manifestations are non-specific, leading to delays in the recognition of the disease.
METHODS: We performed a retrospective analysis of all PVRL cases in Slovenia (2013-2024) and reviewed the literature on clinical presentation, diagnostic approaches and treatment options.
RESULTS: Our population-based, retrospective study included 13 patients with PVRL. The mean age at diagnosis of our patients was 75 years, with women predominating (69%). The most common symptoms were blurred vision (85%) and floaters (62%). The median time to diagnosis was 7 months. All cases were confirmed by vitreous/retinal biopsy. Central nervous system involvement occurred in 36% of patients. The literature review highlights the heterogeneity of clinical manifestations and the importance of sensitive diagnostic methods.
CONCLUSION: PVRL remains a diagnostic challenge due to its variable clinical picture. Increased awareness leads to earlier suspicion of PVRL and thus earlier treatment.

MULTIMODALNO SLIKOVNO DIAGNOSTICIRANJE PRIMARNEGA VITREORETINLNEGA LIMFOMA

MULTIMODAL IMAGING OF PRIMARY VITREORETINAL LYMPHOMA

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UVOD: Primarni vitreoretinalni limfom (PVRL) ostaja diagnostični izziv. Z multimodalnim slikovnim prikazom vidimo različne fenotipske prezentacije PVRL, ki omogočajo ne le vpogled v diagnostiko in razvoj bolezni, ampak tudi natančnejšo prepoznavo vseh oblik; so osnova za spremljanje in odločitve o vrsti in trajanju zdravljenja.
METODE: Predstavitev značilnosti multimodalnih slikovnih preiskav pri naši seriji primerov 13 zaporednih bolnikov z diagnozo PVRL, ki so bili v zadnjih desetih letih obravnavani v Sloveniji.
REZULTATI: Pri oftalmoskopiji so se znaki limfomatozne prizadetosti mrežnice kazali kot enostranski ali obojestranski kremasto rumeni infiltrati mrežnice (točkasti, masni); pri enem bolniku je bil prisoten edem papile vidnega živca. Hipofluorescentne lise, ki so vidne na avtofluorescenci očesnega ozadja (FAF), ustrezajo hiperfluorescenčnim lisam na fluoresceinski angiografiji (FA). Optična koherentna tomografija (OCT) pokaže subretinalne spremembe med pigmentnim epitelom mrežnice (RPE) in Bruchovo membrano; le-te so hiperreflektivne, žariščne ali difuzne, z veliko variabilnostjo velikosti in lokacije. Opazili smo tudi retinitis celotne debeline mrežnice s porušenjem njenih plasti. Pogosto je prisoten vitritis, ki lahko močno vpliva na kakovost slik očesnega ozadja.
ZAKLJUČKI: Multimodalno slikovno diagnosticiranje oftalmologom omogoča potrditev kliničnega suma na PVRL in je v pomoč pri utemeljitvi nadaljnjih invazivnih postopkov. Pomaga lahko tudi pri spremljanu odziva na zdravljenje.

INTRODUCTION: Primary vitreoretinal lymphoma (PVRL) remains a diagnostic challenge. Multimodal imaging provides a view of the different phenotypic presentations of PVRL, which not only provides insight into the diagnosis and evolution of the disease but also allows a more accurate identification of all forms. It is also the basis for follow-up and helps in decisions on the type and duration of treatment.
METHODS: We present the characteristics of multimodal imaging in our case series of consecutive 13 patients diagnosed with PVRL in Slovenia over the past ten years.
RESULTS: On ophthalmoscopy, retinal signs of lymphomatous involvement were observed as unilateral or bilateral creamy-yellow retinal infiltrates, which appeared punctate or mass-like; optic disc edema was presented in one patient. On fundus autofluorescence (FAF), hypofluorescent spots corresponded to hyperfluorescent spots on fluorescein angiography (FA). Optical coherence tomography (OCT) revealed subretinal lesions located between the retinal pigment epithelium (RPE) and Bruch's membrane. These OCT lesions were hyperreflective, either focal or diffuse, with high variability in size and location. Full thickness retinitis with destruction of retinal layers were also observed. The most common finding, vitritis, can lead to poor quality multimodal fundus imaging.
CONCLUSIONS: Multimodal imaging plays a crucial role in guiding the suspicion of PVRL, supporting the need for further invasive procedures, and assessing treatment response, ultimately aiding in timely diagnosis and management.

LIMFOM ŠARENICE: PRIKAZ PRIMERA

IRIS LYMPHOMA: A CASE REPORT

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NAMEN: Prikaz zdravljenja bolnika z limfomom šarenice.
REZULTATI: 72-letni bolnik je bil napoten zaradi lezije šarenice na desnem očesu. Poslabšanje vidne ostrine je opažal nekaj tednov. Oftalmološki pregled je pokazal močno ožiljeno in rožnato lezijo šarenice v temporalnem in spodnjem delu, ki je povzročila anteriorno izbočenost šarenice. Prisotni so bili korektopija, precipitati na endotelu ter katarakta. Ultrazvočna biomikroskopija (UBM) je razkrila zadebeljeno in infiltrirano šarenico in ciliarnik v obsegu 360°. Citopatološka analiza biopsije šarenice je potrdila diagnozo velikoceličnega B-limfoma z zmerno ekspresijo CD20. V okviru sistemske diagnostike na Onkološkem inštitutu so bili pri bolniku ugotovljeni številni limfomski infiltrati po telesu. Uvedena je bila kemoterapija prve linije po shemi R-pola-CHP. Bolnik je prejel skupno 6 ciklusov kemoterapije, dodatno 2 ciklusa rituksimab terapije, 4-krat srednje doze metotreksata ter 7-krat intratekalno aplikacijo. Skupno je prejel tudi 6 intravitrealnih injekcij metotreksata (0,1 ml). Zadnji PET-CT pregled je pokazal popolno remisijo bolezni, ob tem je prišlo tudi do zmanjšanja infiltrata šarenice in ciliarnika. Znakov recidiva pri nadaljnjih kontrolah niso opažali.
ZAKLJUČEK: Limfom šarenice je izjemno redka oblika neoplazme. Pojavi se lahko kot primarna lezija ali kot sekundarni tumor, ki vključuje šarenico in je najpogosteje povezan s sistemskim ne-Hodgkinovim limfomom. Pri starejših bolnikih s perzistentnim anteriornim uveitisom, ki ne odgovarja na zdravljenje, je potrebno pomisliti tudi na to diagnozo. Ključno vlogo pri diagnostiki ima citopatološka analiza biopsije šarenice. Multidisciplinarni pristop, ki vključuje oftalmologe, onkologe in patologe, je bistven za optimalno obravnavo teh bolnikov.

OBJECTIVE: To present the treatment of a patient with iris lymphoma.
RESULTS: A 72-year-old patient was referred for evaluation of a lesion in the right iris, following a progressive decline in visual acuity over several weeks. Ophthalmologic examination revealed a highly vascularized, pink lesion located in the temporal and inferior portion of the iris, resulting in anterior iris bulging. Additionally, corectopia, endothelial precipitates, and cataract were observed. Ultrasound biomicroscopy (UBM) demonstrated a thickened and infiltrated iris and ciliary body with circumferential (360°) involvement. Cytopathological analysis of the iris biopsy confirmed a diagnosis of large B-cell lymphoma with moderate CD20 expression. During systemic workup at the Oncology Institute, multiple lymphoma infiltrates were identified throughout the body. First-line chemotherapy was initiated using the R-pola-CHP regimen. The patient subsequently received a total of six cycles of chemotherapy, supplemented by two additional cycles of rituximab, four cycles of medium-dose methotrexate, and seven intrathecal applications. In addition, six intravitreal injections of methotrexate (0.1 mL) were administered. The most recent PET-CT scan demonstrated complete remission of the disease, while a reduction in the iris and ciliary body infiltrates was documented during subsequent ophthalmological examinations. No signs of recurrence were observed during follow-up visits.
CONCLUSION: Iris lymphoma is an extremely rare neoplasm that may present either as a primary lesion or as a secondary tumor involving the iris, most commonly in association with systemic non-Hodgkin lymphoma. In elderly patients with persistent anterior uveitis unresponsive to conventional therapy, this diagnosis should be considered. Cytopathological evaluation of an iris biopsy is crucial for establishing the diagnosis, and a multidisciplinary approach involving ophthalmologists, oncologists, and pathologists is essential for optimal management.

VLOGA UMETNIH SOLZ PRI ZDRAVLJENJU VNETIJ NA ROŽENICI

THE ROLE OF ARTIFICIAL TEARS IN THE TREATMENT OF CORNEAL INFLAMMATION

Maja Shrestha Šoško
Sponsored by Salus, Slovenia

PEDIATRIČNA OFTALMOLOGIJA

PAEDIATRIC OPHTHALMOLOGY

KAJ JE NOVEGA PRI ZDRAVLJENJU AMBLIOPIJE?

WHAT IS NEW IN AMBLYOPIA TREATMENT

Huban Atilla
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IZDAJA OČAL PO NAROČILNICI – PA JE RES?

PRESCRIPTION GLASSES – IS IT?

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NAMEN: Večinoma imajo pacienti ob kontrolnem pregledu na očalih ustrezno predpisano korekcijo. Včasih pa se zgodi, da nosi pacient očala s precej drugačno korekcijo od nedavno predpisane. To lahko vpliva na njegov vid, počutje z očali, pogosto pa je to, sploh pri otrocih, precej težko zaznati.
METODE: Predstavitev govori o poti naročilnice za očala, ki potuje od oftalmologa do optika in se udejani v predpisanih očalih. V predstavitvi so predstavljeni primeri neustrezno izdelanih očal in težav s katerimi se ob tem srečujemo pri vsakodnevnem delu v ambulanti.
REZULTATI: Navedenih je nekaj primerov, kjer je prišlo do zamenjave stekelc, neustrezne osi astigmatizma, hiperkorekcije miopije, neustrezne centracije stekelc in nagiba stekelc. Naveden pa je tudi primer, kjer so bila izdelana očala, ki so imela povsem drugačno korekcijo od tiste, ki je bila navedena na naročilnici za očala, ki je bila tudi unovčena. Ker to ni osamljen primer, smo želeli s predstavitvijo opozoriti na tovrstno prakso.
ZAKLJUČEK: Neustrezno izdelana očala so lahko eden izmed vzrokov za zavračanje očal pri otrocih, nenavadno vedenje med nošnjo očal, mežikanje, pretirano približevanje stvari med gledanjem. Neustrezno izdelana očala imajo lahko vpliv na vidno ostrino ali škiljenje, zato je pomembno, da natančno preverimo tudi očala, ki jih otrok nosi.

PURPOSE: Mostly, patients wear the appropriate correction on their glasses prescribed during their eye check-up. Sometimes, however, the patient for whom you prescribed glasses earlier wears a much different correction than the one prescribed. This can affect his vision and how he feels with glasses.
METHODS: The presentation is about the journey from the prescription, which travels from the ophthalmologist to the optician who makes the prescribed glasses. The presentation presents examples of improperly made glasses and the accompanying problems we encounter in our daily clinical work.
RESULTS: In the presentation a few examples are given, e.g. incorrectly positioned lenses, lenses with incorrect axis of astigmatism, myopia hypercorrection, incorrect centering and tilting of the lens. Also, an example is presented where glasses with a completely different correction from the one on the prescription were made. Since this is not an isolated case, we wanted to bring attention to these cases.
CONCLUSIONS: Improperly made glasses are one of the reasons for children to refuse their glasses, exhibit unusual behavior while wearing them, squint, and zoom in on things. Inadequate glasses can affect visual acuity or strabismus, so it is important to carefully check the glasses a child is wearing.

NEVUS VEZNICE PRI OTROCIH

CONJUNCTIVAL NEVUS IN CHILDREN

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NAMEN: Nevus je najpogostejši melanocitni tumor veznice pri otrocih. Vezničnі nevusi so asimptomatski in benigni, vendar lahko v času odraščanja in pubertete rastejo in spreminjajo pigmentacijo, zato se pogosto pojavi strah pred maligno transformacijo, ki pa je izjemno redka. Prikazali bomo epidemiološke in klinične značilnosti, diagnostični pristop, prognozo in možnosti zdravljenja nevusa veznice pri otrocih.
METODE: Pregled literature in predstavitev primerov obravnave otrok z vezničnimi nevusi.
REZULTATI: Vezničnі nevusi pri otrocih so dobro omejene, dobro premakljive, nepigmentirane ali pigmenirane lezije na veznici. Pogosto so znotraj nevusa prisotne ciste, ki so znak benignosti. V dobi odraščanja lahko rastejo in spreminjajo pigmentacijo. Patohistološko večino vezničnih nevusov pri otrocih predstavlja vnetni juvenilni idiopatski nevus, ki poleg melanocitne mešane (compound) komponente vsebuje tudi vnetno komponento, ki je vzrok epizod nenadnih pordelosti očesa, sprememb velikosti in pigmentacije. Diagnoza temelji na kliničnem pregledu s špranjsko svetilko in fotografiranju sprednjega očesnega segmenta; če je potrebno, uporabimo tudi slikanje z optično koherenčno tomografijo sprednjega segmenta (AS-OCT) za dokaz cist. Večina nevusov ostane stabilna skozi čas, tveganje za maligno transformacijo v otroški dobi je izjemno majhno, tekom celotnega življenja pa majhno (cca. 1%). Kljub temu je priporočljivo redno letno spremljanje, zlasti pri atipičnih ali hitro rastočih lezijah. Kirurška ekscizija je redko potrebna, vendar se lahko izvede zaradi diagnostične potrditve ob sumu na malignost, funkcionalnih ali estetskih razlogov.
ZAKLJUČEK: Nevusi veznice so pogoste benigne lezije z dobro prognozo. Tveganje za maligno transformacijo je pri otrocih izjemno majhno. Konzervativno spremljanje je najprimernejši pristop, medtem ko je kirurška odstranitev rezervirana za neobičajne primere. Poznavanje kliničnih in patohistoloških značilnosti vezničnih nevusov ter pogovor s starši otrok zmanjša nepotrebno zaskrbljenost in posredovanje, hkrati pa se zagotovi pravočasno zdravljenje, kadar je to potrebno.

PURPOSE: A nevus is the most common melanocytic tumor of the conjunctiva in children. Conjunctival nevi are asymptomatic and benign, but they can grow and change pigmentation during childhood and puberty, often leading to concerns about malignant transformation, which is extremely rare. We will present the epidemiological and clinical characteristics, diagnostic approach, prognosis, and treatment options for conjunctival nevus in children.
METHODS: A literature review and presentation of cases involving children with conjunctival nevi.
RESULTS: Conjunctival nevi in children are well-defined, mobile, non-pigmented, or pigmented lesions on the conjunctiva. They often contain cysts within the nevus, which are a sign of benignity. During adolescence, they may grow and change pigmentation. Histopathologically, most conjunctival nevi in children represent an inflammatory juvenile idiopathic nevus, which, in addition to the melanocytic compound component, also contains an inflammatory component. This inflammation is responsible for episodes of sudden eye redness, changes in size, and pigmentation. Diagnosis is based on clinical examination using a slit lamp and photography of the anterior eye segment. If necessary, anterior segment optical coherence tomography (AS-OCT) is used to confirm the presence of cysts. Most nevi remain stable over time, and the risk of malignant transformation in childhood is extremely low. Over a lifetime, the risk remains small (approximately 1%). Nevertheless, annual monitoring is recommended, especially for atypical or rapidly growing lesions. Surgical excision is rarely needed but may be performed for diagnostic confirmation if malignancy is suspected or for functional or aesthetic reasons.
CONCLUSION: Conjunctival nevi are common benign lesions with a good prognosis. The risk of malignant transformation in children is extremely low. Conservative monitoring is the most appropriate approach, while surgical removal is reserved for unusual cases. Understanding the clinical and histopathological characteristics of conjunctival nevi and discussing concerns with parents helps reduce unnecessary worry and interventions while ensuring timely treatment when needed.

ZDRAVLJENJE GLAVKOMA Z IMPLANTACIJO GLAVKOMSKE VALVULE PRI OTROCIH S STURGE WEBER SINDROMOM- PREDSTAVITEV PRIMEROV OTROK ZDRAVLJENIH NA OČESNI KLINIKI LJUBLJANA

TREATMENT OF CHILDHOOD GLAUCOMA IN CHILDREN WITH STURGE-WEBER SYNDROME USING A GLAUCOMA DRAINAGE DEVICE – A CASE SERIES FROM THE EYE CLINIC LJUBLJANA

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NAMEN: Namen je predstaviti zdravljenje glavkoma pri otrocih s Sturge-Weber sindromom z implantacijo glavkomske valvule.
METODE: Predstavljeni bodo štirje zaporedni primeri otrok (deklice stare od 2,5 let do 16 let) s SWS in glavkomom, ki so bili v obdobju 2013-2025 zdravljeni z implantacijo glavkomske valvule (Bearveldt, BGV ali Ahmed, AGV). Povprečno so bili otroci operirani v starosti 9,5 let, povprečen čas sledenja je bil 48 mesecev.
REZULTATI: Primer1: 16-letna deklica je imela implanirano BGV v levo oko v starosti 12 let, čas sledenja je bil 45 mesecev. 6 mesecev po implantaciji je bila potrebna revizija cevke BGV zaradi naleganja na endotel roženice. Vidna ostrina na levem očesu je bila 0,2-0,3, ekskavacija papile vidnega živca je stabilna (C/D= 0.5-0,6). Deklica je zadnje 4 leta brez lokalne terapije, z urejenim IOP. Primer2: 15-letna deklica je imela implantirano AGV v levo oko v starosti 9 let, čas sledenja je bil 72 mesecev. Pri deklici je bila opravljena revizija valvule 5 let po primarnem posegu. IOP je urejen ob dodatku lokalne in sistemske antiglavkomske terapije, ekskavacija papile vidnega živca je stabilna (C/D=0,5), vidna ostrina je stabilna (1.2 s.c.). Primer3: 2,5 letna deklica je imela implantirano AGV v levo oko v starosti 2 mesecev, čas sledenja je bil 28 mesecev. 2 leti po implantaciji valvule smo opravili revizijo valvule. Od posega dalje je ob dodatni topični antiglavkomski terapiji IOP v mejah normale. Primer4: 13-letna deklica je imela implantirano BGV v desno oko v starosti 1,5 let, čas sledenja je 12 let. 10 let po implantaciji BGV je imela opravljeno operacijo komplicirane sive mrene, 9 mesecev pozneje pa repozicijo IOL in sinehiolizo desno. IOP je od posega dalje urejen ob dodatku topične antiglavkomske terapije, glavkomska okvara ne napreduje.
ZAKLJUČEK: Zdravljenje glavkoma pri otrocih s SWS z implantacijo glavkomskih valvul je učinkovita metoda, podprta z literaturo. Pri dveh bolnikih je bil za nadzor IOP zadostna implantacija glavkomske valvule, pri dveh bolnikih pa je bila za nadzor IOP potrebna dodatna antiglavkomska terapija.

PURPOSE: The purpose of this case series is to present the usefulness of glaucoma drainage devices (GDD) implantation in the treatment of glaucoma associated with Sturge-Weber syndrome.
METHODS: We present four consecutive cases of children (girls aged from 2.5 to 16 years) with glaucoma associated with SWS who were treated with the implantation of a glaucoma drainage device (Baerveldt, BGV, or Ahmed, AGV) in the period 2013–2025. On average, the children underwent surgery at the age of 9.5 years, with a mean follow-up duration of 48 months.
RESULTS: Case 1: A 16-year-old girl had a BGV implanted in her left eye at the age of 12, with a follow-up time of 45 months. Revision of the BGV tube was required 6 months after implantation due to contact with the corneal endothelium. The visual acuity in the left eye was 0.2–0.3, and the excavation of the optic nerve papilla remained stable (C/D = 0.5–0.6). The girl has been without topical therapy for the past 4 years, with a well-regulated IOP. Case 2: A 15-year-old girl had an AGV implanted in her left eye at the age of 9, with a follow-up time of 72 months. A revision of the valve was performed 5 years after the initial surgery. The IOP is well-controlled with the addition

of local and systemic antiglaucoma therapy. The excavation of the optic nerve papilla remains stable (C/D = 0.5), and the visual acuity is 1.2 s.c. Case 3: A 2.5-year-old girl had an AGV implanted in her left eye at the age of 2 months, with a follow-up time of 28 months. A revision of the valve was performed 2 years after the implantation. Since the procedure, the IOP has remained within the normal range with the addition of topical antiglaucoma therapy. Case 4: A 13-year-old girl had a BGV implanted in her right eye at the age of 1.5 years, with a follow-up time of 12 years. Ten years after the BGV implantation, she underwent surgery for complicated cataract, followed 9 months later by IOL repositioning and synechiolysis in the right eye. Since the procedure, the IOP has remained well-controlled with the addition of topical antiglaucoma therapy, and the glaucomatous defect has not progressed.

CONCLUSION: The treatment of glaucoma in children with SWS using GDD implantation is an effective method supported by the literature. In two patients, GDD implantation alone was sufficient to control IOP, while in two cases, additional antiglaucoma therapy was required for IOP regulation. The glaucomatous defect remained stable in all cases.

POMANJKANJE VITAMINA A PRI OTROKU – PREDSTAVITEV DVEH PRIMEROV

TWO CASES OF PAEDIATRIC VITAMIN A DEFICIENCY

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NAMEN: Vitamina A naše telo ni sposobno sintetizirati, zato je nujno, da ga vnesemo s hrano. Ključno vlogo ima pri ohranjanju vida, ohranjanju celovitosti epitelija in sluznic v telesu, humoralni in celični imunosti ter spodbujanju rasti in razvoja. Pomanjkanje je v razvitem svetu pri otrocih redko, pojavlja se predvsem pri kroničnih gastrointestinalnih obolenjih (malabsorbcija, jetrne bolezni), zelo redko pa je posledica slabega vnosa zaradi močno omejenih diet. Hipovitaminoza A povzroča prizadetost očesne površine, okvarjeno funkcijo paličnic in tudi čepnic, redko pa tudi okvaro vidnega živca. Nezdravljena vodi v trajno slepoto, zato je zgodnja prepoznava ključna.
METODE: Predstavitev dveh primerov otrok s hipovitaminozo A, zdravljenih na Očesni in Pediatrični kliniki v Ljubljani.
REZULTATI: Primer 1: 8-deklica je imela zaradi neonatalnega sklerozantnega holangitisa v starosti 7 let transplantacijo jeter. Že pred transplantacijo je tožila o slabem nočnem vidu. Ob pregledu je bila vidna ostrina dobra, elektrofiziološke preiskave so pokazale okvarjeno delovanje sistema paličnic ter znižano delovanje čepnic. Nivoji vitamina A so bili znižani. Po peroralnem nadomeščanju vitamina je sedaj asimptomatska, delovanje sistema paličnic je normalno, čepnic pa še mejno znižano. Primer 2: 5-letni deček je prezentiral s solzenjem, fotofobijo in oteklimi vekami. Slabše se je orientiral v temnem prostoru. Ob pregledu je imel keratinizirano roženico z Bitotovimi pegami, vidni so bili pikčasti defekti epitela roženice. Na očesnem ozadju sta izstopali bledejši papili, elektrofiziološko smo kasneje potrdili odstopanja funkcije paličnic in čepnic ter motnje prevajanja po vidnem živcu oziroma vidni poti. Zaradi splošnega slabega stanja in povišane telesne temperature je bil napoten na Pediatrično kliniko. Ugotovljena je bila sepsa povzročena s Pseudomonas aeruginoso, vrednosti vitamina A so bile nemerljive, MRI slikanje glave ni pokazalo posebnosti. Obsežna diagnostika je izključila bolezni, ki povzročajo slabo absorbcijo ali moten metabolizem vitamina A. Pomanjkanje je bilo najverjetneje posledica zelo omejene prehrane. Po peroralnem nadomeščanju se je splošno stanje, stanje očesne površine in mrežnice popravilo, ostala pa je prizadetost vidnega živca. Deček ima slabo vidno funkcijo in je kategoriziran kot slaboviden otrok.
ZAKLJUČEK: Pomanjkanje vitamina A je v razvitem svetu pri otrocih redko, vendar je prepoznavanje ključno, saj z ustreznim in pravočasnim nadomeščanjem preprečimo trajno okvaro vida in omogočimo normalen otrokov razvoj.

PURPOSE: The human body cannot synthesize vitamin A, making dietary intake essential. Vitamin A plays a key role in maintaining vision, preserving the integrity of epithelial and mucosal surfaces, supporting humoral and cellular immunity, and promoting growth and development. In developed countries, deficiency among children is rare and mainly associated with chronic gastrointestinal diseases (malabsorption, liver diseases). Very rarely, it results from severely restricted diets. Hypovitaminosis A affects the ocular surface and impairs the function of both rods and cones, and in rare cases can also damage the optic nerve. If left untreated, it can lead to permanent blindness. Early diagnosis is thus essential.
METHODS: A presentation of two cases of children with hypovitaminosis A treated at the Eye Clinic and the Pediatric Clinic in Ljubljana.
RESULTS: Case 1: 8-year-old girl underwent liver transplantation at age 7 due to neonatal sclerosing cholangitis. She had complained of poor night vision even prior to transplantation. Examination revealed good visual acuity, however electrophysiological tests showed signs of rod system dysfunction and reduced cone function. Vitamin A levels were low. After oral vitamin A supplementation, she is now asymptomatic; rod function is normal and cone function remains slightly reduced. Case 2: 5-year-old boy presented with tearing, photophobia, and swollen

eyelids. He also had difficulties navigating in dark environments. Examination revealed a keratinized cornea with Bitot's spots and punctate epithelial corneal defects. The optic nerve discs were pale; electrophysiological testing later confirmed dysfunction of both rods and cones as well as optic nerve dysfunction. Due to his generally poor condition and fever, he was referred to the Pediatric Clinic, where Pseudomonas aeruginosa sepsis was diagnosed, his vitamin A levels were immeasurable. Brain MRI was normal. Extensive diagnostics ruled out diseases causing malabsorption or disrupted vitamin A metabolism. The deficiency was most likely due to a severely restricted diet. After oral supplementation, his general condition as well as the condition of the ocular surface and retina improved, but optic nerve damage remained. The boy continues to have reduced visual function and is classified as visually impaired.

CONCLUSION: Hypovitaminosis A is extremely rare in children in developed countries; however, its recognition is essential. With timely and appropriate supplementation, permanent vision impairment can be prevented, and normal development of a child is ensured.

SOLARNA MAKULOPATIJA S SEKUNDARNO MAKULARNO NEOVASKULARIZACIJO PRI OTROKU

SOLAR MACULOPATHY COMPLICATED BY MACULAR NEOVASCULARIZATION IN A PEDIATRIC PATIENT

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NAMEN: Prikaz primera dečka s sekundarno makularno neovaskularizacijo.
METODE: Retrospektivna analiza bolnikove dokumentacije.
REZULTATI: Deček (r.2009) je bil prvič pregledan v očesni dežurni ambulanti zaradi tridnevnega poslabšanja vida na desnem očesu. Opisal je zelo meglen vid v centralnem delu vidnega polja, vidna ostrina desno je bila 0,1 st.n.k. in levo 1,0 s.c. V očesnem statusu je bil sprednji segment v fizioloških mejah, pri pregledu očesnega ozadja je bilo v desni makuli vidno področje rumenkastega prosevanja s hemoragijo, levo pa drobna pikčasta rumena lezija. OCT makule desnega očesa je pokazal subfoveolarno hipereflektivno lezijo s tekočino pod mrežnico in intraretinalno, na OCT makule levo so bili jukstafoveolarno vidni drobni defekti v zunanjih mrežničnih slojih. Z multimodalnim slikanjem smo potrdili MNV desne makule. Na statični perimetriji je bilo na desnem očesu vidno centralno področje znižane retinalne senzitivnosti. Zaradi MNV smo indicirali zdravljenje z zaviralci žilnih endotelnih rastnih faktorjev (ranibizumab). Po prvi aplikaciji je prišlo do pomembne regresije MNV na OCT in izboljšanja vidne ostrine (Vdo: 1,0 cc). Opravljena je bila tudi fluoresceinska in ICG angiografija. Ugotovljena je bila solarna makulopatija.
ZAKLJUČEK: Klinični primer poudarja pomen zgodnjega prepoznavanja in zdravljenja sekundarne makularne neovaskularizacije pri mladih bolnikih, saj lahko zgodnje zdravljenje z anti-VEGF terapijo pomembno pripomore k izboljšanju vida in preprečevanju trajnih poškodb mrežnice.

PURPOSE: To present a case of a boy with secondary macular neovascularization.
METHODS: A retrospective analysis of the patient's medical records.
RESULTS: A boy (born in 2009) was first examined in the emergency ophthalmology clinic due to a three-day deterioration of vision in his right eye. He described severely blurred vision in the central part of the visual field. Visual acuity was 0.1 st.n.k. in the right eye and 1.0 s.c. in the left eye. The anterior segment was without pathological findings. Fundus examination of the right eye revealed a yellowish radiating area with hemorrhage in the macula, while the left eye showed a small punctate yellow lesion. Optical coherence tomography (OCT) of the right macula showed a subfoveal hyperreflective lesion with subretinal and intraretinal fluid, while OCT of the left macula revealed small defects in the outer retinal layers in the juxtafoveal region. Multimodal imaging confirmed macular neovascularization (MNV) in the right macula. Static perimetry demonstrated a central area of reduced retinal sensitivity in the right eye. Due to the presence of MNV, treatment with vascular endothelial growth factor (VEGF) inhibitors (ranibizumab) was initiated. After the first application, significant regression of MNV was observed on OCT, along with an improvement in visual acuity (right eye: 1.0 cc). Fluorescein and indocyanine green angiography were also performed, confirming the diagnosis of solar maculopathy.
CONCLUSION: This clinical case highlights the importance of early recognition and treatment of secondary macular neovascularization in young patients, as prompt anti-VEGF therapy can significantly improve vision and prevent permanent retinal damage.

VREDNOTENJE KRITERIJEV PRESEJANJA ŠTUDIJE ˝POPORODNA RAST IN RETINOPATIJA NEDONOŠENČKOV˝ (G-ROP) V SLOVENSKI KOHORTI

VALIDATION OF THE POSTNATAL GROWTH AND RETINOPATHY OF PREMATURITY (G-ROP) CRITERIA IN A SLOVENE COHORT

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NAMEN: Retinopatija nedonošenčkov (ROP) predstavlja glavno tveganje za izgubo vida pri nedonošenčkih po vsem svetu, zato so redni presejalni pregledi nujni, vendar hkrati predstavljajo veliko obremenitev za zdravstveni sistem. Redno posodabljanje smernic za presejanje je ključnega pomena za uravnoteženje tega bremena in hkrati zagotavljanja optimalnega zdravja oči novorojenčkov. V študiji "Poporodna rast in retinopatija nedonošenčkov" (G-ROP), izvedeni v Severni Ameriki, so bili uvedeni kriteriji, ki poleg gestacijske starosti in rojstne teže vključujejo tudi meritve poporodne telesne teže, s čimer se izboljša natančnost presejanja. Namen našega raziskovanja je bil preveriti in potrditi učinkovitost teh kriterijev v slovenski populaciji nedonošenčkov.
METODE: Izvedena je bila retrospektivna kohortna študija na nedonošenčkih, pregledanih v letu 2021 v Univerzitetnem kliničnem centru Ljubljana, Slovenija. Kriteriji G-ROP študije so bili sistematično uporabljeni za oceno njihove učinkovitosti. Primarni izidi so vključevali občutljivost pri odkrivanju ROP, ki zahteva zdravljenje, občutljivost za katerokoli obliko ROP ter morebitno zmanjšanje števila pregledanih nedonošenčkov.
REZULTATI: Med 102 pregledanimi nedonošenčki jih je 27 (26,4 %) razvilo retinopatijo nedonošenčka. ROP tip 1 je bil diagnosticiran pri 11 (10,7 %) nedonošenčkih, pri čemer sta 2 (1,9 %) razvila agresivno obliko. ROP tip 2 je bil opažen pri 5 (4,9 %) nedonošenčkih, medtem ko smo blažje oblike ROP zabeležili pri 11 (10,7 %) nedonošenčkih. Tako originalni kot poenostavljeni G-ROP kriteriji so uspešno identificirali vse nedonošenčke z ROP tip 1 (občutljivost 100 %, 95 % CI 74–100 %) in vse, pri katerih se je razvila katerakoli oblika ROP (občutljivost 100 %, 95 % CI 88–100 %). Uporaba originalnih G-ROP kriterijev bi zmanjšala število potrebnih presejalnih pregledov za 29,4 % (30 od 102).
ZAKLJUČEK: Naši rezultati kažejo, da so tako originalni kot poenostavljeni G-ROP kriteriji dosegli 100% občutljivost pri odkrivanju ROP tip 1, hkrati pa bistveno zmanjšali število potrebnih presejalnih pregledov. Ti rezultati potrjujejo zanesljivost G-ROP kriterijev v državah z visokim BDP ter poudarjajo njihov potencial za optimizacijo učinkovitosti presejanja, s čimer se zagotovi pravočasna in natančna identifikacija nedonošenčkov z visokim tveganjem.

INTRODUCTION: Retinopathy of prematurity (ROP) remains a major risk to the vision of preterm infants globally, necessitating frequent and resource-intensive screenings. Regular updates to screening guidelines are crucial to balancing this burden while ensuring optimal eye health in newborns. The Postnatal Growth and ROP (G-ROP) study introduced weight-based criteria alongside gestational age and birth weight in North America to enhance screening precision. Our objective was to validate these criteria within a Slovenian cohort.
METHODS: A retrospective cohort study was conducted on preterm infants screened in 2021 at the University Medical Centre Ljubljana, Slovenia. The G-ROP criteria were systematically applied to assess their effectiveness. Primary outcomes included sensitivity for detecting ROP requiring treatment, sensitivity for any ROP, and the potential reduction in the number of infants screened.
RESULTS: Among the 102 infants screened, 27 (26.4%) developed ROP. Type 1 ROP was diagnosed in 11 (10.7%) infants, of which 2 (1.9%) had aggressive ROP. Additionally, type 2 ROP was observed in 5 (4.9%) infants, while 11 (10.7%) had milder forms of ROP. Both the original and simplified G-ROP criteria successfully identified all infants

with type 1 ROP (sensitivity 100%, 95% CI 74%-100%) and all infants who developed any form of ROP (sensitivity 100%, 95% CI 88%-100%). Implementation of the original G-ROP criteria would have reduced the number of infants requiring screening by 29.4% (30 of 102).

CONCLUSION: Our findings demonstrate that both the original and simplified G-ROP criteria achieved 100% sensitivity in detecting type 1 ROP while significantly reducing unnecessary screenings. These results confirm the reliability of the G-ROP criteria in high-income settings and highlight their potential to optimize screening efficiency, ensuring timely and accurate identification of at-risk infants.

KAKO POGOSTO SO OČI KRIVE ZA GLAVOBOL PRI OTROCIH?

HOW OFTEN ARE EYES TO BLAME FOR THE HEADACHE IN CHILDREN?

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NAMEN: Glavobol je zelo pogost pri otrocih in mladostnikih, k oftalmologu pa ti otroci pogosto pridejo, ker izbrani pediater ali starši posumijo na težave z očmi. Najpogostejši očesni vzroki glavobola so refraktivna napaka, okvara akomodacije, bolezen očesne površine, optični nevritis, uveitis in druga očesna stanja. Namen študije je bil ugotoviti očesna bolezenska stanja, ki bi lahko povzročila glavobol in analizirati razširjenost očesnih bolezenskih stanj med otroci z glavobolom.
METODE: Vsi otroke, ki so bili vključeni v raziskavo, je pediater ali pediater nevrolog napotil k oftalmologu zaradi glavobola in vsak otrok je opravil celovit oftalmološki pregled. Primarni izid je bil ugotavljanje razširjenosti očesnih bolezenskih stanj, ki bi lahko kazala na očesni vzrok glavobola ali bi lahko pojasnila glavobol.
REZULTATI: V študijo je bilo vključenih skupno 155 bolnikov (starih od 4 do 19 let, povprečje 11,5 let). Očesno bolezensko stanje je bilo ugotovljeno pri 6,4 % otrok z glavobolom, najpogostejša je bila refrakcijska napaka pri 4,5 %. Bolečine pri premikanju zrkel je navajalo pri 1,3 % pacientov, 0,6 % pacientov je imelo nazalno dvignjeno papilo optičnega živca.
ZAKLJUČKI: Pri večini otrok, ki jih je pediater zaradi glavobola napotil k oftalmologu, je bil očesni pregled v mejah normale. Smotrno bi bilo verjetno najprej razmisliti o pogostejših osnovnih vzrokih za glavobol, kot so migrena, tenzijski glavobol in virusna obolenja, pa tudi o drugih vzrokih, kot so intrakranialni procesi. Poleg tega mora biti na voljo tudi celosten oftalmološki pregled.

PURPOSE: Headache is common in children and they commonly present to an ophthalmologist for suspected underlying ocular problem. The most common ocular causes include refractive error, impairment of accommodation, ocular surface disease, optic neuritis, uveitis and other eye conditions. The purpose of the study was to identify and determine the prevalence ophthalmological disorders that could potentially cause headache.
MEHODS: All children included in the study were referred to the ophthalmologist by the pediatrician or pediatric neurologist due to headache and every child underwent complete ophthalmological examination. Primary outcome was prevalence of one or more ophthalmological findings that might indicate an ocular cause of headache.
RESULTS: A total of 155 patients were included in this study (from 4 to 19 years old, mean 11.5 years). A significant ophthalmologic disorder was found in 6.4% children with headache and most common ophthalmologic disorder in the study was refractive error in 4.5 %. Painful eye movements were reported in 1.3% at the examination and 0.6% had elevated optic discs nasally.
CONCLUSIONS: Most children who were referred to the ophthalmologist by their pediatrician due to the headache had a normal eye examination. Probably, more prevalent underlying reasons for the headache as are migraine, tension-type headache and viral illness, and also more severe reasons such as intracranial processes should first be considered. In addition to that, a full ophthalmologic examination should be available.

KDAJ ELEKTROFIZIOLOŠKE PREISKAVE VIDA POMAGAJO OFTALMOLOGU, KI OBRAVNAVA OTROKA Z OČESNO/ NEVROLOŠKO PATOLOGIJO?

WHEN VISUAL ELECTROPHYSIOLOGICAL EXAMINATIONS CAN BE OF GREAT IMPORTANCE TO THE OPHTHALMOLOGIST TREATING A CHILD WITH OCULAR/NEUROLOGICAL PATHOLOGY?

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NAMEN: Okvare mrežnice in vidne poti pri otroku opredelimo tudi z elektroretinografijo (ERG) in vidnimi evociranim potenciali (VEP). V prispevku predstavljamo primere kako elektrofiziološke preiskave pomagajo oftalmologu pri obravnavi otrok z očesno/nevrološko patologijo.
METODE: S elektrofiziološkimi preiskavami opredelimo delovanje: mrežničnega pigmentnega epitela (elektrookulografija); fotoreceptorjev, čepnic in paličnic ter v naslednji notranji nuklearni plasti, aktivnost On bipolarnih celic in amakrinih celic bolj s periferije mrežnice (skotopični in fotopični ERG) ali kratkovalovnih S čepnic (S-čepnični ERG); makule (multifokalni ERG); On in Off bipolarnih celic (ON-OFF ERG); ganglijskih celic in njihovih aksonov v povezavi z makularnim delom mrežnice (slikovni ERG) ali ganglijskih celic s periferije mrežnice (fotopični negativni odgovor); prevajanje po vidnem živcu, po križajočih se vlaknih v področju kiazme, retrokiazmalni vidni poti ter aktivnost primarne vidne skorje 17 (VEP na draženje s celim poljem in polovico polja); nenormalnega križanja vlaken vidnega živca v kiazmi (bliskovni VEP in onset VEP); parvocelularne vidne poti (barvni VEP).
Vse omenjene preiskave snemamo pri starejših otrocih, v starosti 7 let in več, po priporočilih in protokolih Mednarodnega združenja za klinično elektrofiziologijo vida (ISCEV). Pri dojenčkih in majhnih otrocih hkrati izvajamo pri budnih otrocih sočasno ERG in VEP, po protokolu londonske bolnišnice Great Ormond Street Hospital (GOSH).
REZULTATI: Oftalmolog največkrat napoti otroka na elektrofiziološko preiskavo vida s kliničnim vprašanjem suma ali že opredeljene klinične diagnoze. Elektrofiziologija vida je gotovo pomembna oftalmologu. Pri odkrivanju nekaterih vzrokov infantilnega nistagmusa, ki se običajno pojavi do 6 meseca starosti (Leberjeva kongenitalna amavroza, akromatopsija, prirojena stacionarna nočna slepota, hipoplazija vidnega živca, akiazmija, očesni albinizem, nevroloških vzrokih nistagmusa), ter potrditvi normalnega delovanja mrežnice in vidne poti pri idiopatskem nistagmusu. Ob sumu na makularno distrofijo ali distrofijo čepnic pri otrocih, ko je očesno ozadje normalno in če pomislimo, da slab vid otrok ne simulira (Stargardtova distrofija, Bestova viteliformna distrofija, distrofija čepnic). Pri opredelitvi nekaterih vzrokov za prizadetost nočnega vida pri otrocih z normalnim očesnim ozadjem (prirojena stacionarna nočna slepota, retinitis pigmentoza, sindrom povečanega števila S-čepnic).
Pri sumu na optični nevritis pri otroku. Pri multipli sklerozi se lahko pojavi kot demielinizacija v parvocelularni vidni poti. Pri Leberjevi hereditarni optični nevropatiji, ki se lahko pojavi v zgodnjem otroštvu, kot nenadna obojestranska izguba vida. Pri post-retinalnih tumorjih vidne poti, ko otroci še ne zmorejo opraviti preiskave vidnega polja. Pri otrocih s sistematskimi boleznimi.
ZAKLJUČEK: Oftalmolog napoti otroka na elektrofiziološke preiskave, če sumi na okvaro mrežnice ali vidne poti, če želi spremljati ne napredovanje ali napredovanje bolezni mrežnice/vidne poti.

PURPOSE: Retinal and visual pathway impairment in the child is also evaluated with electroretinography (ERG) and visual evoked potentials (VEP). This presentation describes how electrophysiological examinations help the ophthalmologist in the assessment of children with ocular/neurological pathology.
METHODS: Electrophysiological examinations define function: retinal pigment epithelium (electrooculography); rod and cone photoreceptors and in the inner nuclear layer the activity of On bipolar cells and amacrine cells from the periphery of the retina (full-field ERG) or shortwave S cones (S-cone ERG); macula (multifocal ERG); On and Off bipolar cells (ON-OFF ERG); ganglion cells and their axons in relationship with the macular part of the retina (pattern ERG), or ganglion cells from the retinal periphery (photopic negative response); optic nerves, optic chiasm, retrochiasmal visual pathway, and the primary visual cortex 17 (VEP to full-field and half-field stimulation); abnormal crossing of optic nerve fibers at the chiasm (flash VEP and onset VEP); parvocellular visual pathway (colour VEP). These examinations are recorded in older children, aged 7 years and older, according to the International Society for Clinical Electrophysiology of Vision (ISCEV). In infants and young children, ERG and VEP are performed in an alert child according to the protocol of London's Great Ormond Street Hospital for Sick Children (GOSH).
RESULTS: The ophthalmologist often refers the child with a clinical question, suspected or definite clinical diagnosis. Electrophysiology of vision is certainly important to the ophthalmologist. In detection of some causes of infantile nystagmus that presents usually until 6 months of age (Leber congenital amaurosis, achromatopsia, congenital stationary night blindness, optic nerve hypoplasia, achiasmia, ocular albinism, assessment of neurological causes of nystagmus), as well as to confirm normal retinal and visual pathway function in idiopathic nystagmus. When macular dystrophy or cone dystrophy is suspected in a child with normal fundus and if we consider that poor vision is not simulated (Stargardt dystrophy, Best vitelliform dystrophy, cone dystrophy). In identifying some of the causes of night vision impairment in children with a normal fundus (congenital stationary night blindness, retinitis pigmentosa, enhanced S-cone syndrome). In childhood suspected optic neuritis. Multiple sclerosis in children can show demyelination in the parvocellular visual pathway. In Leber hereditary optic neuropathy, that can be presented in early childhood, as a sudden bilateral loss of vision. In post-retinal tumours of the visual pathway in children, especially when they are not able to perform visual field examination. In children with systemic diseases.
CONCLUSION: The ophthalmologist refers the child when dysfunction in the retina or visual pathway is suspected, to monitor the stability or progression of diseases.

PEDIATRIČNA OFTALMOLOGIJA NA OČESNI KLINIKI UKC LJUBLJANA & NOVE SMERNICE ZA OFTALMIJO NOVOROJENČKA - POGLED PEDIATRIČNEGA OFTALMOLOGA

PAEDIATRIC OPHTHALMOLOGY AT THE EYE HOSPITAL UMC LJUBLJANA & NEW GUIDELINES FOR NEONATAL OPHTHALMIA - PAEDIATRIC OPHTHALMOLOGIST'S POINT OF VIEW

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V uvodu prispevka bo na kratko predstavljena problematika napotovanja otrok na terciarno raven obravnave, nato pa se bo prispevek osredotočil na neonatalno oftalmijo (NO). Predstavljene bodo prenovljene smernice odkrivanja in zdravljenja NO.

The first part discusses paediatric tertiary referrals. In the second part, the new guidelines for neonatal ophthalmia are explained and discussed.

INFEKTOLOŠKA PRIPOROČILA ZA ZDRAVLJENJE NEONATALNE OFTALMIJE

INFECTOLOGICAL RECOMMENDATIONS FOR NEONATAL OPHTHALMIA TREATMENT

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Predstavljen bo infektološki del priporočil za zdravljenje neonatalne oftalmije.

VITREORETINALNA KIRURGIJA

VITREORETINAL SURGERY

VITREORETINALNA KIRURGIJA; OBRAVNAVA PACIENTOV, NAPOTITVE, VIZIJA RAZVOJA

VITREORETINAL SURGERY; PATIENT MANAGEMENT, REFERRALS, VISION FOR FUTURE DEVELOPMENT

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Predstavljena bo aktualna vitreoretinalna dejavnost na Očesni kliniki UKC Ljubljana, priporočila za napotitev in obravnavo bolnikov z epiretinalno membrano in vizija razvoja vitroretinalne kirurgije.

The presentation will include current vitreoretinal activity at the Eye Hospital of the University Medical Centre Ljubljana, recommendations for the referral and treatment of patients with epiretinal membrane, and a vision for the development of vitreoretinal surgery.

PONOVNI ZAGON VITREORETINALNE KIRURGIJE NA ODDELKU ZA OČESNE BOLEZNI UKC MARIBOR

RESTART OF VITREORETINAL SURGERY AT THE DEPARTMENT FOR EYE DISEASES OF THE UNIVERSITY MEDICAL CENTRE MARIBOR

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NAMEN: Incidenca odstopa mrežnice ter druge operabilne mrežnične patologije strmo narašča. Glede na številne epidemiološke študije evropskih držav se je le ta povečala za približno 50% v zadnjih 10. letih. Na očesnem oddelku UKC Maribor smo se za to pred štirimi leti odločili ponovno vzpostaviti program vitreoretinalne kirurgije.
METODE: Z letom 2021 smo začeli pridobivati potrebno opremo ter inštrumente za opravljanje posegov. V letu 2022 smo pod mentorstvom prof. Globočnik Petrovič ter drugih vitreoretinalnih kirurgov in inštrumentark Očesne klinike v Ljubljani začeli 2 letno šolanje enega kirurga, ter krajše šolanje 3 inštrumentark. V letu 2023 smo opravili prve vitreoretinalne posege izbrane patologije, z letom 2024 pa smo zagnali redni elektivni program kot tudi urgentne operacije. Na začetku smo vse posege opravili v splošni anesteziji, trenutno jih približno polovico opravimo v lokalni anesteziji.
REZULTATI: Trenutno posege opravlja 1 kirurg, na začetku šolanja je ena kirurginja, kmalu se ji bo pridružila še druga. Za vitreoretinalne posege je v celoti usposobljenih 5 inštrumentark. V letu 2023 smo opravili 5 vitreoretinalnih posegov. V letu 2024 smo opravili 82 vitreoretinalnih posegov. V letu 2025 smo v prvih dveh mesecih opravili 29 vitreoretinalnih posegov. Trenutno opravljamo elektivne operacije makularne patologije, steklovinskih motnjav, zapletov ishemične retinopatije ter refraktivne posege s potrebo po vitreoretinalnem pristopu. Ob tem opravljamo urgentne operacije odstopa mrežnice, zapletov pri operaciji sive mrene, submakularnih krvavitev, poškodb ter endoftalmitisa. V primeru zapletenejše patologije ali odsotnosti kirurga bolnike po dogovoru še vedno preusmerimo na zdravljenje na očesno kliniko. Prav tako ne opravljamo operacij otrok, odstopov mrežnice kjer pride v poštev zdravljenje s skleralno plombo, odvzema steklovinskih vzorcev ob sumu na maligno bolezen ter operacij kjer bi potrebovali amnijsko membrano.
ZAKLJUČEK: V letu 2024 smo v UKC Maribor uspešno zagnali program vitreoretinalne kirurgije. Lotevamo se vedno kompleksnejše patologije, število operacij, ki jih opravimo vsak mesec narašča. Cilj in želja naslednjih 5 let je izobraziti še vsaj 2 kirurga, ter pridobiti ustrezno opremo, prostore ter anesteziološko podporo, da bi lahko zadostili potrebam regije po elektivnih ter urgentnih vitreoretinalnih posegih.

PURPOSE: The incidence of vitreoretinal patology is increasing. According to many European epidemiological studies it increased by 50% in the last 10 years. In line with these projections we, at the University Medical Centre Maribor decided to restart the vitreoretinal program.
METHODS: In 2021 we started aquiring machines and instruments required for VR surgery. In 2022 one surgeon and 3 nurses started training under the mentorship of prof. Globočnik Petrovič and other VR surgeons and scrub nurses of the Eye Clinic of the University Clinical Centre Ljubljana. In 2023 we performed the first VR surgery, in 2024 we started with a regular elective surgical programe as well as with emergency VR procedures. At the start we did all the procedures in general anesthesia, by now we make approximately 50% in local anesthesia.
RESULTS: Currently we employ 1 surgen, a second one is in training and a third one should start training soon. We have 5 qualified scrub nurses. In 2023 we performed 5 VR procedures, in 2024 we performed 82 procedures and in the first 2 months of 2025 we performed 29 VR procedures. We perform elective surgery of macular pathology, vitreous opacities, complications of ischaemic retinopathy and refractive surgeries with a need for VR approach.

We also treat retinal detachments, cataract surgery complications, submacular haemorhages, trauma and endophthalmitis. In case of a more complex pathology or the absence of the surgeon we still refer the patients to the Ljubljana Eye Clinic. We also don't perform surgery of children, retinal detachments with scleral buckling, vitreous and tissue samples of malignancies and pathologies with the need for amniotic membrane.
CONCLUSION: In 2024 we succesfully started the vitreoretinal surgery program. The number of procedures we perform in steadily increasing, as is the complexity of the patology we treat. Our 5 year goal and wish is to train 2 additional surgeons and to get the equipment an anesthesiological support needed to be able to take care of the VR surgery needs of the region.

VITREKTOMIJA PRI HEMATOVITREUSU: DVOLETNI PREGLED IZIDOV IN ETIOLOGIJE

VITRECTOMY FOR VITREOUS HEMORRHAGE: TWO-YEAR OUTCOMES AND ETIOLOGY

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NAMEN: Raziskati etiologijo in kirurške izide pri bolnikih, ki so imeli hematovitreus in je bila opravljena vitrektomija pars plana (PPV).
METODE: Opravljena je bila neintervencijska, retrospektivna analiza bolnikov s hematovitreusom in PPV med letoma 2023 in 2025 na Očesni kliniki UKC Ljubljana. Beležili smo vzrok hematovitreusa, podatke o najboljši korigirani vidni ostrini, številu ponovljenih operacij, starosti, spolu in dolžini opazovanja.
REZULTATI: V študijo smo vključili 93 oči (87 bolnikov), od tega 59 moških in 28 žensk. Vzrok za hematovitreus je bil proliferativna diabetična retinopatija (PDR) 35/93 (38 %), očesna poškodba 13/93 (14 %), odstop mrežnice 7/93 (8%), neovaskularna degeneracija makule (nAMD) 7/93 (8%) in drugi redkejši vzroki. Pri 13% ni bilo evidentnega drugega vzroka, kot najverjetneje posteriorni odstop steklovine. Ostali vzroki so bili redkejši. Povprečna starost bolnikov je bila 69 let, povprečen čas pooperativnega sspremljanja pa 7 mesecev. Najboljša korigirana vidna ostrina se je izboljšala iz 0,002 na 0,4 ob zadnjem pregledu. Štirje bolniki z nAMD in 25 bolnikov s PDR je bilo pred hematovitreusom zdravljenih z zaviralci VEGF. V 17/93 primerih je bilo potrebno opraviti več kot eno operacijo.
ZAKLJUČEK: Pars plana vitrektomija je varna in učinkovita metoda za izboljšanje vida pri bolnikih s hematovitreusom. Etiologija hematovitreusa je raznolika, kar vpliva na izide zdravljenja. Najpogostejši vzrok hematovitreusa je bila proliferativna diabetična retinopatija. Bolniki z neovaskularno starostno okvaro rumene pege, zaporo centralne mrežnične vene, odprto poškodbo očesa ter mlajši bolniki s sladkorno boleznijo so dosegli najslabše izide.

PURPOSE: To investigate the etiology and surgical outcomes in a cohort of patients undergoing pars plana vitrectomy (PPV) for vitreous hemorrhage (VH).
METHODS: Non-interventional, retrospective, single center case series of patients who underwent PPV for VH in the Eye Hospital, University Clinical Centre Ljubljana between 2023 and 2025. Etiology of VH, best corrected visual acuity, number of reoperations, age, gender and follow-up time were recorded.
RESULTS: The study included 93 eyes (87 patients), of which 59 were male and 28 were female. The cause of hemovitreous was proliferative diabetic retinopathy (PDR) in 35/93 (38%), ocular trauma in 13/93 (14%), retinal detachment in 7/93 (8%), neovascular age-related macular degeneration (nAMD) in 7/93 (8%). Other causes were less common. In 13% of the cases, no evident cause was identified, suggesting that posterior vitreous detachment was the most probable explanation. Other causes were less common. The average age of the patients was 69 years, and the average postoperative follow-up time was 7 months. The best corrected visual acuity improved from 0.002 to 0.4 at the last examination. Four patients with nAMD and 25 patients with PDR had been treated with anti-VEGF agents prior to developing VH. In 17/93 cases, more than one surgery was required.
CONCLUSIONS: Pars plana vitrectomy is a safe and effective method for improving vision in patients with hemovitreous. The etiology of hemovitreous is diverse, which affects the treatment outcomes. The most common cause of hemovitreous was proliferative diabetic retinopathy. Patients with neovascular age-related macular degeneration, central retinal vein occlusion, open globe injury, and younger patients with diabetes mellitus achieved the poorest visual outcomes.

POŠKODBA OČESA Z INTRABULBARNIM TUJKOM: RETROSPEKTIVNA SERIJA PRIMEROV

OCULAR TRAUMA WITH INTRAOCULAR FOREIGN BODY: A RETROSPECTIVE CASE SERIES

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NAMEN: Proučiti značilnosti tujka (CAIB), z njim povzročene poškodbe tkiv ter časa in poteka kirurške oskrbe ter oceniti njihov vpliv na funkcionalni izid pri bolnikih s poškodbo očesa s CAIB.
METODE: Vključenih je bilo 31 bolnikov (31 oči) s poškodbo s CAIB, obravnavanih na Očesni kliniki Univerzitetnega kliničnega centra v Ljubljani v letih 2020-2024. Pri vseh je bil CAIB odstranjen v sklopu primarne ali sekundarne kirurške oskrbe. Beležili smo dolžino, obliko in vrsto tujka, lokacijo, velikost in obliko vstopne rane, končno lokacijo tujka, prisotnost poškodbe irisa, leče in mrežnice, endoftalmitisa; čas primarne oskrbe in čas sekundarne oskrbe, pristop odstranitve tujka, potrebo po nadaljni kirurški oskrbi, najboljšo korigirano vidno ostrino (BCVA) ob sprejemu in 6 mesecev po zadnji operaciji.
REZULTATI: 29/31 tujkov je bila kovinskih, 2/31 organska (les); 21/31 ploščatih, 3/31 paličastih,10/31kroglastih; 7/31 z dolžina najdaljše stranice <2mm, 21/31 2-5mm, 3/31 >5mm. Vstopna rana na roženici centralno pri 4/31, ekscentrično 17/31, sklera <6mm za limbusom 5/31, sklera >6mm za limbusom 5/31. Poškodba leče pri 17/31, irisa 13/31, odstop mrežnice 5/31; končna lokacija v sprednjem segmentu 7/31, v steklovini 8/31, na mrežnici 15/31. Začetni endoftalmitis pri 7/31. Primarna oskrba pri 90% (27/30) v 3 dneh, pri manj kot 25% teh (6/27) v 6 urah, sekundarna z odstranitvijo tujka pri 26/27 v sedmih dneh; pri 10 2-7 dan,pri 11 v prvih dveh dneh, pri 5 istočasno s primarno oskrbo. Pri 4 bolnikih je bila opravljena le primarna oskrba z odstranitvijo tujka. Odstranitev tujka skozi limbalni pristop pri 14, skozi skleralni pristop pri 10, skozi vstopno rano pri 2 bolnikih. Nadaljna kirurška oskrba pri 13/31; operacijo sive mrene 3, vstavitev ali repozicijo umetne leče 5 , revitrektomijo zaradi zapletov ali odstranitve silikonskega olja 6, PKP 1, enukleacijo 1. BCVA ob sprejemu je bila >0,1 po Snellenu pri 13/31, dojem+ do 0,05 po Snellenu pri 17/31, negativen dojem svetlobe pri 1 in je tak ostal tudi po oskrbi. V skupini preoperativno dojem+ do 0,05 je bila končna BVCA >0,5 pri več kot 30%. Skupna končna BCVA >0,5 po Snellenu pri skoraj 50% (14/31), pri skoraj 20% (6/31) celo 1,0.
ZAKLJUČEK: Večina poškodb je bila povzročena s kovinskim ploščatim tujkom, dolžine <5 mm, ki je vstopil na roženici ekscentrično, na poti poškodoval iris in/ali lečo in pristal na mrežnici ekstramakularno. Končni funkcionalni izid je bil v primeru pravočasne in primerne kirurške oskrbe dober.

PURPOSE: To investigate intraocular foreign body (IFB) characteristics, tissue damage caused by it and the timing and course of surgical care and to evaluate their influence on visual outcome for patients with IFB trauma.
METHODS: 31 patient (31 eyes) with IFB ocular trauma, treated at Department of Ophthalmology University Medical Centre Ljubljana in years 2020-2024 were included. All had IFB removed either as part of primary or secondary surgical care. The length, shape and type of the foreign body were noted, location, size and shape of its entry site, the final location of IOF in the eye; iris, lens and retinal injury; presence of endophthalmitis, timing of primary and secondary surgical care, IFB removal approach, the need for later surgical interventions, best corrected visual acuity (BCVA) at presentation and 6 months after last surgical intervention.
RESULTS: 29/31 of IFB were metal, 2/31 organic (wood); 21/31 flat, 3/31 linear, 10/31round; 7/31 had max. length <2mm, 21/31 2-5mm, 3/31 >5mm. Central cornea entry wound in 4/31, eccentric in 17/31, sclera <6mm behind the limbus 5/31, sclera >6mm behind the limbus 5/31. Lens injury 17/31, iris injury 13/31, retinal detachment 5/31; final location in anterior segment 7/31,vitreous 8/31, retina 15/31. Mild endophthalmitis in 7/31. Primary surgery in 90%(27/30) in 3 days, with less than 25% of those (6/27) in 6 hour, secondary surgery with IFB removal

in 26/27 in seven days; in 10 cases 2-7 day, in 11 in first 2 days, in 5 simultaneously with primary surgery. 4 only had primary surgery with IOF removal. IOF was removed through limbal incision in 14 cases, scleral incision in 10, entry wound in 2. Later surgical intervention in 13/31; cataract surgery in 3, implantation or reposition of artificial lens 5, revitrectomy for retinal detachment or silicon oil removal 6, corneal transplantation 1, enucleation 1. BCVA at presentation was >0,1 Snellen in 13/31,light perception to 0,05 Snellen in 17/31, no light perception in 1, it remained such after surgery. In group with preoperative BCVA of light perception to 0,05 Snellen final BVCA was >0,5 Snellen in more than 30%. Altogether final BCVA was >0,5 Snellen in almost 50%(14/31), in almost 20%(6/31) 1,0.

CONCLUSION: Most injuries were caused by flat metal foreign body of <5mm in length entering the eye through noncentral cornea, damaging lens and/or iris on the way and ending in the extramacular retina. The final visual outcome in case of properly timed and executed surgical care was good.

KLINIČNI REZULTATI PO VITREKTOMIJI PARS PLANA IN ZAMENJAVI ALI IMPLANTACIJI IOL PRI BOLNIKIH Z DISLOCIRANIMI INTRAOKULARNIMI LEČAMI

CLINICAL RESULTS AFTER PARS PLANA VITRECTOMY AND IOL EXCHANGE OR IMPLANTATION IN PATIENTS WITH INTRAOCULAR LENS DISLOCATION

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NAMEN: Analiza kliničnih rezultatov bolnikov po zamenjavi oziroma repoziciji dislociranih IOL s pristopom pars plana.
METODE: V retrospektivni študiji smo analizirali klinične podatke 18 zaporednih bolnikov. Pri vseh bolnikih je bila opravljena vitrektomija pars plana in zamenjava dislocirane IOL s skleralno fiksacijo (12 primerov) ali implantacija IOL v sulkus, v primerih kapsularne podpore (3 primeri); opravljena s strain istega kirurga (M.M.). V 3 primerih afakih oči je bila opravljena sekundarna implantacija IOL s skleralno fiksacijo. Analizirali smo pred in pooperativno vidno ostrino, očesni tonus, pooperativno pozicijo IOL in intra ali pooperatvne komplikacije.
REZULTATI: Glavna indikacija za poseg je bila dislokacija IOL v steklovinski prostor (15 pacientov) ali predoperativna afakija (3 pacienti). 66.7% je bilo moških, mediana starost 71 let. Povprečna pooperativna nekorigirana vidna ostrina 0.4 ± 0.06 (logMAR 0.4) je bila signifikantno izboljšana v primerjavi s predopertivno nekorigirano vidno ostrino 0.061 ± 0.018 (logMAR 1.22) ($P < 0.001$). Pri 12 očeh je bil pooperetivni refraktivni rezultat znotraj ±1.0 dioptrije, pooperativna najboljša korigirana vidna ostrina je bila 0.5 ±0.05 (logMAR 0.3). 4 pacienti so predhodno imeli poškodbo očesa, pri 7 je bil pridružen glavkom. Pred in pooperativni znotraj očesni tlak je bil stabilen. Pooperativno je bila v večini primerov prisotna dobra pozicija IOL, razen v 2 primerih, kjer je bila optika IOL delno pred zenico. V 1 primeru je spontano izzvenela s poleganjem bolnika, pri drugem je bila razrešena z opravljeno periferno iridektomijo. V 1 primeru smo ugotavljali nodularni anteriorni skleritis na mestu haptike IOL, ki je bil uspešno zdravljen s konzervativno terapijo.
ZAKLJUČEK: Zamenjava dislocirane IOL s pars plana vitrektomijo in implantacijo IOL s skleralno fiksacijo ali implantacijo v sulkus, v primeru kapsulrne podpore, je varna kiruška tehnika z dobro poopertivno pozicijo IOL, izboljšano vidno ostrino in dobrimi refraktivnimi rezultati.

PURPOSE: To analyze the clinical outcomes of patients undergoing dislocated IOL exchange and repositioning with pars plana vitrectomy.
METHODS: Retrospective, consecutive, single-center, case series of 18 eyes of 18 patients were studied. All patients were operated by a single surgeon (M.M.). In all eyes pars plana vitrectomy was performed with IOL exchange using either scleral fixation (12 cases) or IOL sulcus implantation in case of capsular support (3 cases). In 3 aphakic eyes secondary IOL implantation was performed using scleral fixation technique. Pre- and post-operative best corrected visual acuity (BCVA), intraocular pressure (IOP), post-operative IOL centration, intra-, and postoperative complications were analyzed.
RESULTS: The most common indication was IOL dislocation (15 patients), 3 patients were aphakic. 66.7% were men; median age: 71 years. Mean uncorrected visual acuity significantly improved from 0.061 ± 0.018 (logMAR 1.22) preoperatively to 0.4 ± 0.06 (logMAR 0.4) at last follow-up ($P < 0.001$). 12 eyes (66.7%) met an refractive outcome within ±1.0 diopter, post-operative BCVA was 0.5 ± 0.05 (logMAR 0.3). Previous eye trauma was present in 4 patients, 7 patients had a history of glaucoma. Pre- and postoperative IOP was stable. Postoperative IOL centration was good in most cases (16/18), IOL optic capture was noticed in 2 cases. In 1 case IOL repositioned

spontaneously with supine position and in the other case surgical iridectomy was performed. In 1 case we observed anterior nodular postoperative scleritis at the site of intrascleral IOL haptic, which was managed conservatively.

CONCLUSION: Dislocated IOL management with pars plana vitrectomy and either scleral fixation or, in case of capsular support, sulcus IOL implantation is safe with good postoperative IOL centration and improved visual acuity and good refractive outcomes.

SEROZNI ODSTOP MAKULE S CISTOIDNIM EDEMOM PO OSKRBI PENETRANTNE POŠKODBE ZRKLA S KOVINSKIM INTRAOKULARNIM TUJKOM – PREDSTAVITEV PRIMERA

SEROUS RETINAL DETACHMENT WITH CYSTOID MACULAR OEDEMA AFTER SURGERY FOR AN INTRAOCULAR METALLIC FOREIGN BODY REMOVAL – CASE REPORT

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V urgentno ambulanto je prišel 16 letni moški, ki je dan prej doma med vadbo z utežmi prejel kovinski tujek v področje levega očesa. Ob prvem pregledu je navajal le draženje očesa, vidna ostrina je bila 1,0 brez korekcije. Klinično je bilo vidno manjše vstopno mesto paralimbalno na skleri, v steklovini pred makulo je bil viden kovinski tujek, nad zgornjo temporalno arkado pa udarno mesto tujka na mrežnici. Prisotnost le enega tujka smo potrdili tudi s CT. Opravili smo urgentno operacijo z zašitjem rane, barvanjem steklovine s triamcinolonom, induciranim PVDjem do začetka srednje periferije, vitrektomijo ter odstranitvijo tujka skozi sklerotomijo. Opravili smo laser okoli udarnega mesta, na koncu posega smo sklerotomije zašili, aplicirali intravitrealni antibiotik vankomicin, pooperativno je prejemal sistemski moksifloksacin. Naslednji dan je pri bolniku bil prisoten visok serozni odstop v makuli z izrazitim edemom mrežnice, kliničnim izgledom foramna. Prav tako je prišlo do padca vidne ostrine na 0,1, očesni pritisk je bil v mejah normale. Bolnik je tožil nad slabšim vidom, drugih težav pa ni navajal. V naslednjih dneh se je subretinalna tekočina počasi resorbirala, ostajal je blag intraretinalni edem, pojavljati se je začel odstop membrane limitans interne z nekaj hiperreflektivne vsebine, vidna ostrina se je začela izboljševati. Tako anatomsko kot funkcionalno se je stanje ob naslednjih kontrolah izboljševalo, 3 mesece po poškodbi je bila vidna ostrina 0,8 ob korekciji z -1D, torej je prišlo do miopizacije, vztrajajo le drobne ciste mrežnice. Pri bolniku, kjer je operacija poškodbe očesa z intraokularnim tujkov potekala brez posebnosti je prišlo do nepričakovanega pooperativnega zapleta. Po pregledu literature je bilo v posameznih primerih podobno stanje opisano pri pooperativni hipotoniji, katere pa pri bolniku nismo zabeležili. Prav tako v literaturi nismo našli primerov drugih možnih vzrokov za bolnikovo pooperativno stanje.

We treated a 16 year old male with a left intraocular metallic foreign body suffered from a weight training injury the day before. At the exam his VA was 1,0. There was a small entry point in the perilimbal sclera, in the vitreous we could see a small foreign body, there was also a contusion oedema above the superior temporal arcade. We confirmed the presence of 1 foreign body with a CT scan. We did urgent surgery with sutturing of the entry point, dyeing of the vitreous with Triamcinolone, induction of the posterior vitreous detachment to the equator, vitrectomy and removal of the foreign body through the sclerotomy. We lasered around the contusion area, sutured the sclerotomies, applied intravitreal Vancomicin and gave systemic Moksifloxacin. The surgery was uneventful. The next day we observed a large seroud macular detachment with large intraretinal cysts, on examination it looked like a macular hole. The patient complained of poor vision, which was 0,1, but denied any other symptoms. The eye pressure was within limits. In the next days the detachment improved, as did the oedema and the vision, but soon the internal limiting membrane detached with some hyperreflective submembrane fluid. At 3 months post-op the anatomy improved, VA was 0,8 with -1,0D correction, only a few small retinal cysts remained. We observed an unforseen complication of an otherwise uneventful surgery for an intraocular foreign body removal. After searching through the literature we only found a few similiar cases where such anatomy was seen after postoperative hypotony, which we didn't observe in our patient. We didn't find any other possible causes for our patients postoperative status.

VITREKTOMIJA ZA ZDRAVLJENJE RETINOPATIJE NEDONOŠENČKOV

VITRECTOMY FOR RETINOPATY OF PREMATURITY

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NAMEN: Predstavitev izkušenj z vitrektomijo za zdravljenje retinopatije nedonošenčkov (ROP) na Očesni kliniki Ljubljana.
METODE: Predstavitev kliničnih primerov 2019-2024.
REZULTATI: Obravnavali smo 8 oči štirih nedonošenčkov, od tega 6 oči 3 nedonošenčkov z ROP stadija 4 in dve očesi enega nedonošenčka s premakularno krvavitvijo ob agresivni posteriorni ROP (APROP). Pri vseh očeh smo opravili 25g pars plana vitrektomijo z ohranitvijo očesne leče. Pri 5 očeh z ROP stadija 4 smo z razrešitvijo trakcije dosegli stabilizacijo kliničnega stanja in trajen poleg mrežnice. Pri enem očesu z ROP stadija 4 je prišlo zaradi napredovale periferne trakcije ob vstopu v steklovinski prostor do iatrogenega totalnega odstopa mrežnice. Pri obeh očesih s premakularno krvavitvijo smo vzpostavili sprostitev vidne osi.
ZAKLJUČEK: Stadij 4 ROP velja za zadnji stadij, pri katerem je z vitrektomijo še mogoče doseči trajno ugoden rezultat v smislu dolgoročne razrešitve trakcijskega odstopa mrežnice. Ključno je sistematično presejalno testiranje, ki zagotovi pravočasno postavitev indikacije za vitrektomijo preden ROP napreduje v totalni odstop stadija 5. Premakularna krvavitev ob APROP je atipična indikacija za vitrektomijo pri ROP. Namen operacije v teh primerih je preprečiti ambliopijo zaradi premakularnih motnjav in odstraniti potencial razvoja brazgotinske trakcije, ki jo inducira prisotnost preretinalne krvavitve.

PURPOSE: Presentation of experience with vitrectomy for retinopathy of prematurity (ROP) at Ljubljana Eye Hospital.
METHODS: Presentation of clinical cases 2019-2024.
RESULTS: We present 8 eyes of four premature babies. 6 eyes of 3 babies developed early tractional retinal detachment - stage 4 ROP, and 2 eyes of one baby developed premacular haemorrhage in the context of aggressive posterior ROP (APROP). All eyes underwent 25g lens-sparing vitrectomy within days after diagnosis. In 5 eyes of stage 4 ROP the release of tractional vitreous bands resulted in long-term retinal reattachment. In one eye with stage 4 ROP the entry into the vitreous space was complicated due to advanced peripheral traction, which resulted in iatrogenic total retinal detachment. In both eyes with premacular haemorrhage complete clearing of the optical axis was achieved.
CONCLUSIONS: Stage 4 is considered the last stage of ROP, where vitrectomy is still reasonably likely to achieve a permanently favorable result in terms of lasting retinal re-attachment. The key is systematical ROP screening, which will ensure a timely indication for vitrectomy, before the total detachment of stage 5 ROP develops. Premacular haemorrhage in the context of APROP is an atypical indication for vitrectomy. The goal of surgery in these cases is reducing amblyopia risk, as well as removing the potential for cicatrical traction, which is promoted by the presence of preretinal bleeding.

ŠKODLJIV VPLIV STATIČNE IN PRISILNE DRŽE NA TELO LAHKO PREPREČIMO

THE HARMFUL IMPACT OF STATIC AND FORCED POSTURE ON THE BODY CAN BE PREVENTED

Branka Slakan Jakovljević
Sponsored by Carl Zeiss, Germany

GLAVKOM

GLAUCOMA

PET NAJPOMEMBNEJŠIH IZZIVOV PRI VSAKODNEVNEM OBVLADOVANJU GLAVKOMA

THE FIVE MOST IMPORTANT CHALLENGES IN DAILY GLAUCOMA MANAGEMENT

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OBRAVNAVA GLAVKOMSKIH BOLNIKOV V CENTRU ZA GLAVKOM OČESNE KLINIKE UKC LJUBLJANA, NAPOTITVE IN NOVE MOŽNOSTI ZDRAVLJENJA

GLAUCOMA MANAGEMENT AT THE GLAUCOMA CENTRE OF THE EYE HOSPITAL UMC LJUBLJANA, REFERRALS AND NEW TREATMENT OPTIONS

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NAMEN: Predstavitev obravnave bolnikov v Centru za glavkom Očesne klinike, UKC Ljubljana, smernic za napotitev in novih možnosti zdravljenja v prihodnosti.
METODE: Analiza vseh obiskov in prvih napotitev v glavkomsko ambulanto Očesne klinike UKC Ljubljana, število kirurških in laserskih posegov letno in trend v zadnjih 10 letih. Pregled literature o novostih s področja medikamentnega zdravljenja in različnih sistemov za dostavo zdravila v oko, ki so na voljo ali v kliničnih raziskavah.
REZULTATI: Leta 2024 je bilo opravljenih 5632 kontrolnih pregledov in 974 prvih pregledov, prisoten je trend naraščanja v 10-letnem obdobju. Kirurške posege smo opravili pri 283 primerih, vključujejo različne vrste filtracijskih operacij – trabekulektomije, Preserflo mikrošante, Xen gel stente ab-interno, dolgodrenažni implante in revizije. V letu 2024 smo naredili 167 laserskih posegov, ki zajemajo ciklodiodni laser, selektivno lasersko trabekuloplastiko in periferno iridotomijo. Nova zdravila za zniževanje očesnega tlaka vključujejo zaviralce Rho kinaze, prostaglandine - agoniste receptorjev FP, EP2 in EP3 in znotrajočesne implante z dolgotrajnim sproščanjem učinkovine.
ZAKLJUČEK: Za boljši izid zdravljenja je pomembnejše, da odkrijemo bolnike s hitrim napredovanjem glavkoma, pri katerih lahko nastopi slabovidnost ali slepota za časa njihovega življenja, kot pa da preveč zdravimo in prepogosto pregledujemo bolnike z očesno hipertenzijo z nizkim tveganjem za konverzijo. Ta prioriteta je vključena v priporočila za napotitev v Center za glavkom.

PURPOSE: To present the glaucoma management at the Glaucoma Centre of the Eye Hospital UMC Ljubljana, guidelines for referral and the future horizons of medical treatment of glaucoma.
METHODS: Analysis of all outpatient visits and first referrals to the Glaucoma Centre of the Eye Hospital UMC Ljubljana, surgical/laser procedures performed annually with a trend over the last ten years. A literature review of novel medical treatments and delivery systems for glaucoma that are already available or under development.
RESULTS: In 2024, there were 5632 consultations and 974 first referrals with a trend to increase over a 10-year period. Surgical interventions, including different types of filtering surgery - trabeculectomy, Preserflo microshunt, Xen gel stent ab-interno, long tube drainage implants and revisions were performed in 283 cases. Laser procedures, including cyclodiode, selective laser trabeculoplasty and peripheral iridotomy, were performed in 167 cases in 2024. Novel medical treatments for glaucoma include Rho kinase inhibitors, prostaglandin FP, EP2 and EP3 receptor agonists and various sustained-release intraocular implants to reduce intraocular pressure.
CONCLUSION: To improve the outcomes of glaucoma patients, it is important to detect those with rapidly progressing disease who are likely to experience visual impairment during their lifetime, rather than overtreating and over examining too many low-risk ocular hypertensive patients. This priority is reflected in the recommendations for referral to the Glaucoma Centre.

GLAVKOM IN IRIDOKORNEALNI ENDOTELIJSKI SINDROM

GLAUCOMA AND THE IRIDOCORNEAL ENDOTHELIAL SYNDROME

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NAMEN: Prikazati diagnostične metode pri klinični oceni iridokornealnega endotelijskega (ICE) sindroma in zdravljenje glavkoma, ki predstavlja sekundarno komplikacijo ICE sindroma.
METODE: ICE sindrom je skupina motenj, ki jo označujejo patološka fiziologija in morfologija roženičnega endotela, kar vodi do različnih stopenj izražanja progresivne atrofije šarenice, roženičnega edema in/ali nastanka periferrnih anteriornih sinehij (PAS). Glavkom nastane zaradi proliferacije in migracije spremenjenih endotelnih celic preko očesnega zakotja na površino šarenice in posledičnim nastankom PAS. Diagnostične metode ICE sindroma vključujejo določitev najboljše korigirane vidne ostrine (BCVA), biomikroskopijo, oftalmoskopijo, gonioskopijo, Goldmannovo aplanacijsko tonomerijo in uporabo in vivo konfokalne mikroskopije (IVCM). Zdravljenje glavkoma je osredotočeno na znižanje povišanega očesnega pritiska (IOP), kar dosežemo z medikamentoznim ali kirurškim zdravljenjem.
REZULTATI: Predstavljeni so rezultati diagnostičnih metod pri klinični oceni 2 bolnikov z enostranskim ICE sindromom. Biomikroskopija je odkrila srebrno/siv izgled roženičnega endotela in korektopijo z vlekom zenice proti področju PAS, področja atrofije šarenice in ektropija uvee. Gonioskopija je odkrila PAS v različnem obsegu. IVCM je odkrila opazno asimetrijo roženičnega endotela med prizadetim in neprizadetim očesom. IVCM endotela je prikazala »epitelizacijo« roženičnega endotela: pleomorfne epitelioidne celice, iregularne velikosti in oblike, nejasnih mej in hiperreflektivna jedra. Pri prvem bolniku pride po 10 letih do dviga IOP in nastanka glavkoma, ki je 14 mesecev urejen z medikamentoznim zdravljenjem, nato pa je potrebno kirurško zdravljenje. Pri drugem bolniku je ob postavitvi diagnoze prisoten glavkom s povišanim IOP, nato je IOP 6 mesecev urejen z medikamentoznim zdravljenjem, nato pa je potrebno kirurško zdravljenje.
ZAKLJUČEK: Postavitev diagnoze ICE sindroma in zdravljenje sekundarnega glavkoma predstavlja pomemben klinični izziv.

PURPOSE: To present diagnostic methods in the clinical evaluation of iridocorneal endothelial (ICE) syndrome and glaucoma treatment, which represents a secundar complication of ICE syndrome.
METHODS: The ICE syndrome is a group of disorders characterized by abnormal physiology and mophology of the corneal endothelium, leading to varying degrees of progressive iris atrophy, corneal edema and/or peripheral anterior synechiae (PAS). Glaucoma results from abnormal endothelial cell proliferation and migration over the anterior chamber angle and onto iris surface, leading to PAS formation. Diagnostic methods of ICE syndrome include acquiring best corrected visual acuity (BCVA), slit-lamp biomicroscopy, ophthalmoscopy, gonioscopy, Goldmann aplanation tonometry and in vivo confocal microscopy (IVCM). Glaucoma treatment is focused on lowering the increased intraocular pressure (IOP), which is achieved with medical or surgical treatment.
RESULTS: Presented are the results of diagnostic methods in the clinical evaluation of 2 patients with unilateral iridocorneal endothelial (ICE) syndrome. Slit-lamp biomicroscopy revealed silver/gray appearence of the corneal endothelial layer, corectopia with the pupil drawn toward an area of PAS, areas of iris atrophy and ectropion uveae. Gonioscopy revealed PAS in different circumference. IVCM revealed marked asymmetry of corneal endothelial layers between affected and unaffected eye. IVCM of the endothelium showed »epitelium-like« changes: pleomorphic epithelioid cells, with irregular size and shape, indistinct borders, and hyperreflective nuclei. First patient developed glaucoma with increased IOP after 10 years, IOP was then 14 months controlled with medical tratment, then surgical treatment was needed. Second patient at diagnosis presented glaucoma with increased IOP, IOP was then 6 months controlled with medical tratment, then surgical treatment was needed.
CONCLUSION: Diagnosing the ICE syndrome and the treatment of secondary glaucoma represents a important clinical challenge.

POOPERATIVNI ZAPLETI PO FILTRACIJSKI GLAUKOMSKI OPERACIJI: TRABEKULEKTOMIJA IN IMPLANTACIJA PRESERFLO MIKROŠANTA

POSTOPERATIVE COMPLICATIONS AFTER FILTRATION GLAUCOMA SURGERY: TRABECULECTOMY AND IMPLANTATION OF THE PRESERFLO MICROSHUNT

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NAMEN: Trabekulektomija in implantacija Preserflo mikrošanta sta najpogosteje izvajani filtracijski operaciji za zniževanje intraokularnega tlaka (IOT) pri bolnikih z glavkomom na Očesni kliniki v Ljubljani. Kljub njuni učinkovitosti in široki uporabi, pooperativni zapleti še vedno predstavljajo pomemben klinični izziv, ki lahko vpliva na dolgoročno uspešnost posega in vidno funkcijo bolnika. Namen predavanja je predstaviti najpogostejše zaplete, da bi jih lahko preprečili, prepoznali in čim prej pravilno rešili.
METODE: Pregled literature v PubMed.
REZULTATI: Med najpogostejšimi zgodnjimi zapleti po teh operacijah je hipotonija, ki je lahko posledica različnih vzrokov. Kaže se s slabšo vidno ostrino, plitvejšim sprednjim prekatom, gubami in odstopom žilnice ter makulopatijo zaradi nizkega tlaka. Čeprav se implantacija Preserflo mikrošanta šteje za manj invazivno v primerjavi s trabekulektomijo, so pravtako možni podobni zapleti. Kasnejši zapleti vključujejo fibroziranje filtracijske blazinice, ki se lahko pojavi kadar koli, zlasti pri bolnikih, ki že vrsto let prejemajo lokalno antiglavkomsko terapijo. Proces fibrozacije je pogojen z različnimi biološkimi odzivi tkiva posameznika na kirurški poseg in se lahko razvije kljub uporabi antimetabolitov. Dodatni očesni posegi pred ali po glavkomski operaciji prav tako povečujejo tveganje za fibroziranje. Pogost zaplet po filtracijskih operacijah je tudi pospešeno nastajanje in napredovanje sive mrene, kar je posebej moteče pri mlajših bolnikih. Med najresnejšimi zapleti sta blebitis in endoftalmitis, ki lahko pomembno poslabšata vidno funkcijo.
ZAKLJUČEK: Pravočasno prepoznavanje in ustrezno obvladovanje teh zapletov sta ključnega pomena za dolgoročno ohranitev vidne funkcije in preprečevanje nadaljnjega napredovanja glavkoma. Pravilno načrtovanje operativnega posega, prepoznavanje dejavnikov tveganja za zaplete, skrbno pooperativno spremljanje in prilagojena terapija omogočajo boljše rezultate, zmanjšujejo pogostost pooperativnih zapletov in zmanjšujejo potrebo po dodatnih posegih.

PURPOSE: Trabeculectomy and Preserflo microshunt implantation are the most commonly performed filtration surgeries for reducing intraocular pressure (IOP) in glaucoma patients at the Eye Clinic in Ljubljana. Despite their effectiveness and widespread use, postoperative complications remain a significant clinical challenge that can impact the long-term success of the procedure and the patient's visual function. The aim of this presentation is to highlight the most common complications to facilitate their prevention, recognition, and timely management.
METHODS: A literature review was conducted using PubMed.
RESULTS: One of the most frequent early postoperative complications following these procedures is hypotony, which can arise from various causes. It manifests as reduced visual acuity, a shallower anterior chamber, choroidal folds and detachment, and maculopathy due to low intraocular pressure. Although Preserflo microshunt implantation is considered less invasive compared to trabeculectomy, similar complications may still occur. Late complications include fibrosis of the filtration bleb, which can develop at any time, particularly in patients who have received long-term topical antiglaucoma therapy. The fibrosis process is influenced by various individual biological tissue responses to surgery and may occur despite the use of antimetabolites. Additional ocular

procedures before or after glaucoma surgery further increase the risk of fibrosis. Another common complication following filtration surgeries is the accelerated formation and progression of cataracts, which is especially concerning in younger patients. Among the most severe complications are blebitis and endophthalmitis, both of which can significantly impair visual function.

CONCLUSION: Early recognition and appropriate management of these complications are crucial for preserving long-term visual function and preventing further glaucoma progression. Proper surgical planning, identification of risk factors for complications, careful postoperative monitoring, and tailored therapy improve surgical outcomes, reduce the incidence of postoperative complications, and minimize the need for additional interventions.

SPREGLEDANI GLAVKOM OB PREDPISOVANJU OČAL

OVERLOOKED GLAUCOMA AT GLASSES PRESCRIPTION

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UVOD: S prikazom primera spregledanega primarnega glavkoma odprtega zakotja (POAG) želimo opozoriti na sistemsko anomalijo predpisovanja očal brez meritev znotrajočesnega pritiska (IOP). Ob tem imajo nekateri izvajalci ambulantne oftalmološke dejavnosti kljub nasprotovanju stroke koncesijo le za predpis očal in drugih okulističnih storitev ne izvajajo.
KLINIČNI PRIMER: 63-letni izobražen, delovno aktiven bolnik je bil avgusta 2023 obravnavan v našem očesnem centru zaradi smiselnosti operacije sive mrene ob napredovalem POAG. Povedal je, da je zaradi slabšanja vida 8 let obiskoval oftalmologa v izbrani optiki s koncesijo. Tam so mu vsaki 2 leti predpisali nova očala, IOP mu niso nikoli izmerili. Ker očala vida niso ustrezno korigirala, je poiskal pomoč v drugi očesni ambulanti, kjer so ugotovili zoženo vidno polje in izmerili IOP do 47 mmHg. Postavljena je bila diagnoza POAG in uveden Xalatan. Ob pregledu pri nas 4 mesece kasneje je bil IOP 16/16 mmHg, Vdo 0,7 cc in Vlo 0,3p cc, klinično in morfološko pa so bili prisotni znaki napredovalega glavkoma s C/D 0,9-1,0. Operacija sive mrene je delno popravila vidno ostrino (Vdo 0,9p in Vlo 0,7p), vendar pa je na obeh očeh ostal izrazit generaliziran izpad, delno tudi v centralnem vidnem polju. Razprava: POAG je eden najpogostejših vzrokov za nepovratno okvaro vida po 40. letu, zato je ob predpisu očal pri starejših priporočeno merjenje IOP. Z ZZZS je sklenjenih 71 pogodb za izvajanje ambulantne oftalmološke dejavnosti, od tega je 7 koncesij podeljenih samo za predpisovanje očal. Obseg pregleda v okviru teh koncesij s strani ZZZS ni definiran in povečini ne zajema niti merjenja IOP, kar lahko vodi v izgubo vida zaradi neodkritih očesnih bolezni. Razširjeni strokovni kolegij za oftalmologijo je na Ministrstvo za zdravje večkrat naslovil mnenje, da je koncesija za oftalmologijo nedeljiva in mora zagotavljati celovit pregled ter ne le predpisa očal, vendar se stanje ni spremenilo.
ZAKLJUČEK: Opisani primer hude izgube vida pri delovno aktivnem bolniku zaradi spregledanega glavkoma ni osamljen. V okviru 7 koncesij se pregled za očala na napotnico izvaja v preko 20 optikah po vsej državi. Tudi v številnih drugih optikah, kjer so pregledi samoplačniški oz. vključeni v ceno očal, se IOP pogosto ne meri. V teh ambulantah je vsako leto obravnavanih na tisoče pacientov, kar je veliko zdravstveno tveganje. Ker pri glavkomu vidna ostrina do poznih stadijev ni prizadeta, je potrebno ob predpisu očal zagotoviti vsaj meritev IOP.

INTRODUCTION: We present the case report of an overlooked primary open-angle glaucoma (POAG), with intention to illustrate a systemic anomaly of glasses prescription without intraocular pressure (IOP) measurement. Despite the opposition of The Professional Board of Ophthalmology some outpatient ophthalmic providers hold the contract with state insurance company (ZZZS) for glasses prescription only and do not provide other eye care services.
CLINICAL CASE: A 63-year-old active patient with advanced POAG was seen in our eye centre for evaluation of his cataract. He had been seeing an ophthalmologist at optical store with ZZZS contract for 8 years. There he was prescribed new glasses every 2 years. IOP had never been measured. As the glasses did not correct his vision adequately, he sought help at another eye clinic, where they discovered narrowing of the visual field and IOP up to 47 mmHg. Xalatan was introduced. In our centre 4 months later the IOP was 16/16 mmHg, Vre 0,7 cc and Vle 0,3p cc. Clinically and morphologically the signs of advanced glaucoma were present with C/D of 0.9-1.0. Cataract surgery partially corrected visual acuity. However, a marked generalized loss remained in both eyes, partially in the central visual field. Discussion: POAG is one of the most common causes of irreversible visual impairment after the age of 40. When prescribing glasses over this age, it is recommended to measure IOP. There are 71 contracts with ZZZS for the provision of outpatient eye care, of which 7 contracts are given only for the prescription of glasses. Scope of examination under these contracts is not defined and mostly does not even cover the IOP measurement. This can lead to loss of vision due to undiagnosed eye diseases. The Professional Board for Ophthalmology

has addressed Ministry of Health several times urging that the contract is indivisible and should provide a comprehensive eye examination. Despite this, the situation has not changed.

CONCLUSION: The case of severe visual loss due to an overlooked glaucoma is not isolated. In the context of 7 contracts, prescription of glasses is carried out in over 20 optical stores around the country. Also in many other optical stores where examinations are done without the contract, IOP is often not measured. This represents a large health risk. As visual acuity in glaucoma is not impaired until late stages of the disease, it is necessary to ensure that at least IOP measurement is done at glasses prescription.

SVETOVNI TEDEN GLAVKOMA 2025 - AKTIVNOSTI ČLANOV SEKCIJE ZA GLAVKOM

WORLD GLAUCOMA WEEK 2025 - ACTIVITIES OF THE GLAUCOMA SECTION MEMBERS

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V razvitem svetu je glavkom je na 2. mestu kot vzrok nepovratne slepote, ki bi jo lahko s pravočasnim odkrivanjem in zdravljenjem preprečili. Svetovno združenje za glavkom je pobudnik Svetovnega tedna glavkoma, ki je letos potekal od 9. - 15. Marca. Namenjen je opozarjanju na redne očesne pregled in ozaveščanju javnosti o bolezni v medijih, z organizacijo preventivnih pregledov in izobraževanjem. Letos so se aktivnostim pridružili člani Sekcije za glavkom po celi Sloveniji z izvajanjem presejalnih pregledov oseb z večjim tveganjem za glavkom. Predstavljeni so rezultati presejalnih pregledov.

Glaucoma is the second leading cause of irreversible blindness in the developed countries which is preventable by timely diagnosis and treatment. World Glaucoma Week, this year ongoing from March 9-15, is an initiative organised by the World Glaucoma Association with the goal to alert everyone to have regular eye checks, raise awareness in public about the disease in the media, by organising screening examinations and education. This year, members of the Glaucoma Section across Slovenia joined the activities by conducting screening examinations for people at higher risk of glaucoma. The results of the screening examinations are presented.

KATARAKTA
IN REFRAKTIVNA KIRURGIJA
CATARACT
AND REFRACTIVE SURGERY

VLOGI OFTALMOLOGA KIRURGA IN OSEBNEGA OFTALMOLOGA PRI ZAGOTAVLJANJU NAJBOLJŠE OSKRBE BOLNIKOV S KATARAKTO

WHAT IS THE POSITION OF THE EYE SURGEON AND THE PERSONAL OPHTHALMOLOGIST IN PROVIDING BEST POSSIBLE CARE FOR CATARACT PATIENTS

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Vidiki sodobne najboljše obravnave bolnikov s katarakto s strani osebnega oftalmologa in oftalmologa kirurga: od edukacije javnosti, osebnih splošnih zdravnikov in bolnikov, do možnosti preventive nastanka katarakte, pa prepoznavanja simptomov. Pomembno je tudi strokovno utemeljeno zagotavljanje dostopnosti operacije. Z vidika kirurga pa sodobne tehnike operacije, usklajevanja visokih pričakovanj bolnikov glede izida ter nenazadnje tudi primerna obravna najtežjih terciarnih primerov sekundarnih fiksacij intraokularnih leč, operacij po zapori zakotja, okvarah roženice, po poškodbah.

Different aspects of up-to-date best care of cataract patients by personal ophthalmologist and by eye surgeon: from education of the society, general practitioners and patients, to possible prevention and recognition of symptoms. The access to cataract surgery should base on professional justification. And from the aspect of eye surgeon best care means incorporating modern surgical techniques as well as coordinating patients' expectations. Last but not least the care should be taken also for the most diffucult tertiary cases of secondary IOL fixation, cataract surgery after angle closure in opaque corneas, trauma cases.

OPERACIJA SIVE MRENE PRI PACIENTIH Z OZKO ZENICO

MANAGING CATARACT SURGERY IN PATIENTS WITH SMALL PUPILS

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NAMEN: Operacija sive mrene je težja pri bolnikih z majhno zenico, vendar lahko z ustrezno predoperativno pripravo in prilagoditvijo vaše kirurške tehnike zagotovite dobre rezultate.
METODE: Prikazani bodo povdarki na predoperativni pripravi pacienta, ki bi lahko olajšali sam potek operacije in tehnike intraoperativnih rešitev ter prilagotve same tehnike fakoemulzifikacije, ki omogočijo izvršitev operacije tudi pri pacientih z ozko zenico z čim manjšo verjetnostjo komplikacije operacije.
REZULTATI: Kako doseči operacijo sive mrene brez komplikacije v čim krajšem času s čim manj kolateralne škode za pacientovo oko
ZAKLJUČEK: Operacija sive mrene pri ozki zenici je mnogo težja in privede do rupture zadnje kaspule s prolopasom steklovine v do 50 % .Včasih lahko predoperativni ukrep izboljšajo to situacijo, vendar rešitev pogosto vključuje spremembe v kirurški tehniki.

PURPOSE: Cataract surgery is more difficult in patient with small pupil, but with proper preoperative preparation and adapting your surgical technique can ensure good outcomes.
METHODS: Highlights on the preoperative preparation of the patient will be shown, which could facilitate the course of the operation itself and the techniques of intraoperative solutions, as well as adaptations of the phacoemulsification technique itself, which enable the operation to be performed even in patients with a narrow pupil with as little probability of complications of the operation as possible.
RESULTS: How to achieve cataract surgery without complications in the shortest possible time with as little collateral damage to the patient's eye as possible
CONCLUSION: Cataract surgery with a small pupil is much more difficult and leads to rupture of the posterior capsule with vitreous prolapse in up to 50%. Pre-operative action can sometimes improve this situation, but the solution frequently involves changes in surgical technique.

OPERACIJA KATARAKTE Z UPORABO TRYPAN BLUE BARVILA IN MALYUGINOVEGA RETRAKCIJSKEGA OBROČA

CATARACT SURGERY USING TRYPAN BLUE STAINING AND THE MALYUGIN RING

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VSEBINA VIDEA: Po izvedbi temporalne kornealne incizije apliciramo intrakameralni midriatik. Zaradi slabe midriaze vstavimo Malyuginov retrakcijski obroč za mehansko dilatacijo zenice. Za boljšo vizualizacijo sprednje lečne kapsule apliciramo trypan blue, kar olajša izvedbo kapsulorekse s pinceto. Hidrodisekcija, fakoemulzifikacija in aspiracija lečnih mas potekajo brez intraoperativnih zapletov. Po natančni aspiraciji kortikalnih mas implantiramo intraokularno lečo v kapsularno vrečko. Uporaba barvil za vizualizacijo kapsule ter mehanskih pripomočkov, kot je Malyuginov obroč, predstavlja pomembno podporo pri kirurški obravnavi pacientov z ozko zenico in prispeva k večji varnosti ter predvidljivosti operativnega postopka.

VIDEO SUMMARY: Following a temporal corneal incision, an intracameral mydriatic agent is administered. Due to insufficient mydriasis, a Malyugin ring is inserted to achieve mechanical pupil dilation. Trypan blue is used to stain the anterior lens capsule, enhancing visualization and facilitating the creation of a continuous curvilinear capsulorhexis using forceps. Hydrodissection, phacoemulsification, and aspiration of the lens material proceed without intraoperative complications. After meticulous cortical cleanup, an intraocular lens is implanted into the capsular bag. The use of capsule-staining dyes and mechanical pupil expansion devices, such as the Malyugin ring, is a valuable adjunct in cataract surgery for patients with small pupils, contributing to increased surgical safety and procedural predictability.

OPERACIJA SIVE MRENE BREZ KAPLJIC: UČINKOVITOST IN VARNOST UPORABE 10 MG TRIAMCINOLONA SUBKONJUNKTIVALNO KOT EDINE TERAPIJE PO OPERACIJI SIVE MRENE

DROPLESS CATARACT SURGERY: EFFICIENCY AND SAFETY OF APPLICATION 10MG TRIAMCINOLONE SUBCONJUNCTIVALY AS ONLY THERAPY AFTER CATARACT SURGERY

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NAMEN: Namen te študije je bil oceniti varnost in učinkovitost pooperativne aplikacije subconjunktivalnega triamcinolona brez dodatne lokalne pooperativne terapije v primerjavi s standardnim pooperativnim zdravljenjem po operaciji sive mrene.
METODA: V vsako skupino je bilo razporejenih po 20 bolnikov. Prva skupina je na koncu operacije prejela 10 mg triamcinolona subconjunktivalno, medtem ko je druga, kontrolna skupina, prejemala standardno pooperativno zdravljenje s topičnim deksametazonom, ki se je postopno zmanjševal v obdobju štirih tednov. Pooperativne ocene so bile opravljene prvi dan po operaciji, nato 7 dni, 4 tedne in 6 tednov po posegu. Najboljša korigirana vidna ostrina (BCVA) in pregled sprednjega segmenta sta bila opravljena na prvih treh obiskih, medtem ko je bila šesta teden izmerjena debelina makule v centralnem podpolju (CSMT) za zaznavanje morebitnega pooperativnega cistoidnega edema makule (CME).
REZULTATI: V nobeni skupini ni bilo zaznanih pooperativnih vnetij ali okužb. CSMT pred in po operaciji med skupinama ni pokazala pomembnih razlik v šestem tednu, prav tako v pooperativnem obdobju ni bil zaznan noben primer CME.
ZAKLJUČEK: Ugotovitve kažejo, da je uporaba triamcinolona kot edine pooperativne terapije varna alternativa standardnemu režimu, kar bi lahko zmanjšalo stroške zdravljenja in olajšalo obremenitev tako za bolnike kot za zdravstvene delavce.

PURPOSE: This study aimed to evaluate the safety and efficiency of postoperative subconjunctival triamcinolone application without any additional postoperative local therapy, compared to standard postoperative treatment following cataract surgery.
METHOD: Twenty patients were assigned to each group: First group receiving 10mg triamcinolone subconjunctnivaly at the end of the surgery and the second, control group, undergoing standard postoperative therapy of topical dexamethasone tapered during four weeks.. Postoperative evaluations were conducted on the first postoperative day, 7 days, 4 weeks, and 6 weeks after surgery. BCVA, examination of anterior segment at the first three visits were conducted and central sub field macular thickness (CSMT) was measured at week 6 in order to detect eventual postoperative cystoid macular oedema (CME).
RESULTS: No postoperative inflammation or infections were observed in either group. CSMT between two groups pre and postoperatively didn't show significant change at week 6. , neither CME was detected during the postoperative period.
CONCLUSION: The findings suggest that administering triamcinolone as the sole postoperative therapy is a safe alternative to the standard regime resulting in potential cut costs and release treatment burden for both patients and healthcare professionals.

SPLOŠNI IN PERSONALIZIRANI PRISTOPI ZA OBVLADOVANJE BOLEZNI OČESNE POVRŠINE PRED, MED IN PO OPERACIJI KATARAKTE

GENERAL AND PERSONALISED APPROACHES FOR THE MANAGEMENT OF OCULAR SURFACE DISEASE BEFORE, DURING AND AFTER CATARACT SURGERY

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Pričakovanja pacientov po operaciji katarakte so danes višja kot kdarkoli prej. Poleg kakovostnega posega in optimalnega izid vida je pomembno tudi ugodje med in po posegu, pri čemer ima glavno vlogo zdravje očesne površine. Zaradi visoke prevalence bolezni suhega očesa v populaciji s katarakto (60-80%) in tihega poteka pri vsaj 50% pacientov je pred operacijo pomembno aktivno odkrivanje z dodatnimi testi za očenso površino Pri blažjih oblikah svetujemo umetne solze; raziskava je potrdila specifično pozitivno vrednost umetnih solz s trehalozo v predoperativnem obdobju. Zdravljenje predpišemo pri bolj izraženih simptomih in/ali znaki. Za hiter učinek uvedemo pulzno topično kortikosteroide (npr. Softacort) in gel. Od drugih bolezni očesne površine pri kar 52% bolnikov s katarakto najdemo patologijo meibomovih žlez. Ker operacija dodatno poslabša lipidni sloj, je primerno pred posegom izvajati toaleto vek ter pri blefaritisu predpisati topični azitromicin (Azyter). Izboljšanje solznega filma zagotovi optimalne topografske meritve, antibiotično zdravljenje pa zmanjša obremenitev očesne površine z mikrooragnizmi. Lahko uporabimo OSFI (angl. Ocular Surface Frailty Index), s katerim individualno predvidimo pojav simptomov suhega očesa po operaciji katarakte. Poseg poruši ravnovesje očesne površine zaradi sproščanja vnetnih faktorjev, fototoksičnosti mikroskopa in kapljic s konzervansi; zato naj bo časovno optimiziran, ob začiti roženice in omejeno rabo kapljic s konzervansi. Tudi pooperativno je konzervans – benzalkonijev klorid v kapljicah eden glavnih vzrokov iatrogenega suhega očesa, zato predpišemo kapljice brez konzervansa. V primerjalni raziskavi rabe dexametazona z ali brez konzervansa so že po 2 tednih ugotovili pomemben porast epitlenih defektov roženice in občutka tujka v skupini z, ne pa tudi v skupini brez konzervansa. Vendar sta tudi sam antibiotik in NSAID toksična za epitelne in čašaste celice, zato se vsa terapija rabi pod nadzorom in čim krajši čas glede na nujno preventivno. Simptomi suhega očesa dosežejo vrh 7. dan in se nadaljujejo še 3-6 mesecev. Pacientom svetujemo nego vek s pripravki z oljem čajevca, za katerega je raziskava pokazala, da pomembno zniža breme z Demodex. Svetujemo tudi umetne solze brez konzervansa s podalšanim vlaženjem in osmoprotekcijo. Randomizirana študija je namreč pokazala hitrejše in večje izboljšanje simptomov ter znakov suhega očesa pri pacientih, ki so uporabljalali umetne solze s kombinacijo hialuronske kisline in 3% trehaloze v primerjavi s drugimi umetnimi solzami. Trehaloza vpliva na celjenje očesne površine, žaščiti celice in zmanjša nivo vnetja. S predoperativno diagnostiko usmerjeno v očesno površino in primerno optimizacijo le-te se lahko izognemo zapletom in zagotovimo ugodje. Z natančnim pooperativnim spremljanjem in prilagajanjem terapije pa dosežemo tudi optimalen izid vida in visoko zadovoljstvo pacientov.

Patients' expectations after cataract surgery are higher than ever before. Not only high-quality procedure with optimal visual outcome, but also comfort during and after the procedure are expected, and healthy ocular surface has a major role in this. High prevalence of dry eye in cataract patients (60-80%) with frequently asymptomatic course (>50%), warrants for specific ocular surface tests before surgery for detection. In beginning stages, prescribing artificial tears is of benefit; and as proved in a study specific positive effect can be obtained with trehalose artificial tears. Treatment is prescribed when symptoms and/or signs of dry eye are more prominent. For quick response a short course of topical corticosteroids (e.g. Softacort) and gel are advised. As far as other ocular

surface diseases, meibomian gland pathology is present in 52% of cataract patients. Surgery disturbs the lipid layer, thus preoperative lid hygiene and in blepharitis also topical azithromycin (Azyter) are suitable. Stabilisation of the tear film also allows for optimal keratometries, while antibiotics reduce the burden of microorganisms. The Ocular Surface Frailty Index (OSFI) can also be used to individually predict the onset of dry eye symptoms after cataract surgery. The surgery itself disturbs the balance of the ocular surface due to the release of inflammatory factors, photo toxicity of the microscope and preservatives in eye drops; therefore, it should be optimised in time, performed with corneal protection gels and minimal use of preserved drops. Postoperatively, the preservatives in drops, especially benzalkonium chloride also represent one of the main causes of iatrogenic dry eye, so we prescribe preservative-free therapy. In a comparative study of dexamethasone with or without preservative, a significant increase in corneal epithelial defects and foreign body sensation was proved after 2 weeks in the preservative but not in the non-preservative group. However, antibiotic and NSAID are also toxic for epithelial and goblet cells, thus all therapy should be prescribed for the shortest possible time relative to the needed prophylaxis and with regular check-ups. Dry eye symptoms peak on the 7. postoperative day and continue as long as 3-6 months. Patients are advised to continue with lid hygiene using tea tree oil preparations, which have been shown in trial to significantly reduce the burden of Demodex. Preservative-free artificial tears with prolonged hydration and osmoprotection are advised. In fact, a randomised study showed a faster and greater improvement in symptoms and signs of dry eye in patients using artificial tears with a combination of hyaluronic acid and 3% trehalose compared to other artificial tears. Trehalose has an effect on the healing of the ocular surface, protects the cells and reduces the level of inflammation. Pre-operative ocular surface diagnostics and optimisation prevent complications and ensure comfort, while close follow-up and therapy modification results in optimal visual outcome and patient satisfaction.

NOVA GENERACIJA LEČ S PODALJŠANIM ŽARIŠČEM EDOF/IROF

NEW GENERATION OF EDOF/IROF IOLS

Petra Schollmayer
Sponsored by Oktal Pharma, Croatia

PRVE IZKUŠNJE Z GALAXY SPIRALNO INTRAOKULARNO LEČO

FIRST IMPRESSIONS WITH GALAXY SPIRAL IOL

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V zadnjih letih je prišlo do velikega tehnološkega razvoja na področju različnih vrst intraokularnih leč (IOL), ki se uporabljajo za zdravljenje prezbiopije. Tehnologija razširjene vidne ostrine (EDOF) ima namen ustvariti eno neprekinjeno žariščno točko, ki omogoča razširjen vidni fokus, v nasprotju z multifokalnimi (MF) lečami, ki ustvarijo več gorišč in sicer po eno za vsako razdaljo. V naši klinični praksi smo kot prvi v Sloveniji imeli priložnost preizkusiti IOL s spiralno tehnologijo, ustvarjeno z umetno inteligenco. To sta RayOne Galaxy in Galaxy toric IOL. Ta leča ima edinstven spiralni dizajn, zasnovan za zagotavljanje neprekinjenega podaljšanega obsega vida, ki omogoča dober vid na vse fokalne razdalje z bistveno manj disfotopsij. Lečo smo vstavili v 7 oči, kjer smo merili delovanje leče in izmerili vidno ostrino za srednjo razdaljo (80 cm) in bližino (40 cm) v fotopičnih (85 luksov) in mezopičnih (20 luksov) svetlobnih pogojih. Vsi pacienti so bili koregirani za daljavo, ostrina vida pa je bila merjena v decimalkah z uporabo ETDRS tablic. Pooperativna kontrola je bila opravljena po 1 mesecu, ciljali smo prvi minus (postoperativna refrakcija) na biometriji, izmerjena z Anterion tehnologijo (Heidelberg Engineering). Vse oči so dosegle povprečno nekoregirano daljinsko vidno ostrino vida 0,6 decimalk, s korekcijo - 0,86 D pa 1,0 decimalk. Pri vseh obravnavah je bilo potrebno obdobje nevro-adaptacije. Vsi pacienti so dosegli neodvisnost od očal na srednje razdalje in na blizu. Koregirana srednja vidna ostrina na 80 cm je bila 0.89 v fotopičnih in 0.57 v mezopičnih pogojih osvetljave. Koregirana bližinska vidna ostrina na 40 cm pa je bila 0.70 v fotopičnih in 0.53 v mezopičnih pogojih osvetljave. V bodoče bomo pri pacientih ciljali na pooperativno refrakcijo s prvim plusom in primerjali biometrijo Anteriona tudi z drugimi aparaturami kot sta Pentacam in Argos sistem.

In recent years, there has been an overwhelming influx of different types of intraocular lenses (IOLs) as treatment for presbyopia. The extended depth of focus technology creates a single elongated focal point to enhance depth of focus, in contrast to the multiple foci of multifocal (MF) lenses. In our clinical practice we had the chance to test the first-ever spiral IOL designed using artificial intelligence, the RayOne Galaxy and Galaxy toric IOL. This lens has a unique spiral design, formulated to deliver a continuous full range of vision and minimise dysphotopsia. We implanted the lens in 7 eyes and we measured the lens performance for intermediate (80cm - DCIVA) and near (40cm - DCNVA) VA in both photopic (85 lux) and mesopic (20 lux) lightning conditions. All patients were distance corrected, and their visual acuity (VA) was measured in decimal, using ETDRS visual charts. Postoperative follow up was at 1 month targeting the first minus postoperative refraction, measured with Anterion (Heidelber Engineering). All eyes resulted in a mean uncorrected distance visual acuity (UDVA) of 0,6 decimals, but all of them achieved a mean distance corrected visual acuity (DCDVA) od 1.0 decimals with a mean correction of -0,86 D. A period of neuroadaptation was needed for UDVA. All patients achieved spectacle independence for intermediate and near vision. DCIVA was of 0.89 and 0.57 decimals in photopic and mesopic conditions respectively and DCNVA was of 0.70 and 0.53 decimals in photopic and mesopic conditions respectively. For next patients we will target the first plus postoperative refraction and we will compare Anterion biometry with Pentacam and Argos systems.

ZGODNJI IN SREDNJEROČNI KLINIČNI IZIDI INTRAOKULARNE LEČE RAYNER GALAXY: PROSPEKTIVNA OCENA KAKOVOSTI VIDA, KONTRASTNE OBČUTLJIVOSTI IN KRIVULJ IZOSTRITVE

EARLY AND MID-TERM CLINICAL OUTCOMES OF THE RAYNER GALAXY INTRAOCULAR LENS: A PROSPECTIVE EVALUATION OF VISUAL QUALITY, CONTRAST SENSITIVITY, AND DEFOCUS CURVES

Niraj Mandal
Sponsored by MedOps, United States

ALCON CLAREON PANOPTIX – MULTIFOKALNA INTRAOKULARNA LEČA

Marko Hawlina
Sponsored by Swixx BioPharma, Switzerland

PREVALENCA ROŽENIČNEGA ASTIGMATIZMA PRI OČEH PRED OPERACIJO SIVE MRENE

PREVALENCE OF CORNEAL ASTIGMATISM IN CATARACT SURGERY CANDIDATES

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NAMEN: Ugotoviti prevalenco skupnega roženičnega astigmatizma pri očeh pred operacijo sive mrene.
METODE: Zbrali smo predoperativne podatke (delta TK) izmerjene z IOL Master 700 (Carl Zeiss) za 500 oči v obdobju od 1. septembra do 31. oktobra 2024 v OKC Pfeifer.
REZULTATI: Prevalenco skupnega roženičnega astigmatizma 1.0 D ali višje je imelo 29,4% oči, od tega jih je 7,2% imelo astigmatizem med 1,5 D in 1,9 D ter 3,2% oči 2.0 D in več. Čeprav torična IOL lahko prispeva k neodvisnosti od nošenja očal za daleč pri očeh z roženičnim astigmatizmom, obstajajo nekateri zadržki pri svetovanju glede vstavitve toričnih IOL glede na pacientova pričakovanja o pooperativni vidni funkciji. Nestabilnost zonul in posteriorna kapsularna dehiscenca vplivajo na rotacijsko stabilnost IOL. Sindrom suhega očesa, roženične distrofije, degeneracije, brazgotine, predhodna poškodba, bolezen ali operacija roženice, nestabilen ali iregularen astigmatizem in druge bolezni, če predhodno niso zdravljene, povzročajo nestabilne predoperativne meritve in/ali znižujejo vidljivost med ali po operaciji. Nezadostno razširjena zenica zmanjša vidljivost oznak na periferiji IOL. Pacienti po vitreoretinalni operaciji, nestabilnim očesnim pritiskom/glavkomom ali drugo patologijo vidnega živca ter vidnega polja, uveitisom imajo lahko pooperativno slabšo vidno ostrino oziroma potrebujejo zdravljenje pred operacijo sive mrene.
ZAKLJUČEK: Vstavitev toričnе IOL je indicirana pri operaciji sive mrene pri očeh, ki imajo predoperativni skupni astigmatizem 1,0 D ali več, kar je imelo skoraj 30% pregledanih oči v naši študiji. Pri večini oči je bil astigmatizem 1,5 D ali nižji, le 3,2% oči v naši študiji je imelo skupni roženični astigmatizem 2.0 D ali višji.

PURPOSE: To review the prevalence for total corneal astigmatism in patients awaiting cataract surgery.
METHODS: Preoperative data (delta TK) were collected from 500 cataract eyes using IOL Master 700 (Carl Zeiss) at OKC Pfeifer from 1. September to 31. October 2024.
RESULTS: Prevalence of eyes with delta TK 1.0 dioptres (D) or higher was in 29,4% of eyes, with 7,2 % having delta TK from 1,5 D to 1.9 D and 3,2 % having 2.0 D or more of total corneal astigmatism. Although toric IOLs could contribute to spectacle-free vision in eyes with corneal astigmatism, there are some considerations and patient counselling depending on patients' expectations is needed. Zonular instability and posterior capsular dehiscence are contraindications as a stable capsular bag- IOL complex is needed. Corneal diseases and irregularities, especially in the centre, induce irregular astigmatism, cause inconsistent measurements, worsen visibility during and after surgery, therefore, if possible, it may be better to treat them prior to astigmatic correction. Insufficient pupillary dilatation can hamper the visualisation of alignment marks in the periphery. Patients with retinal pathologies, after vitreoretinal surgery, with unstable glaucoma, uveitis pathology or optic nerve pathology may have compromised visual outcome due to preexisting pathology. Patient also don't decide for toric IOLs implantation due to high cost.
CONCLUSION: Toric IOL implantation is recommended in cataract eyes with total preoperative astigmatism of 1.0 D or higher. Almost 30% of cataract eyes had corneal astigmatism of 1.0 D or higher. Most of the eyes had astigmatism of 1.5 D or lower, only 3,2% of eyes in our cohort had total corneal astigmatism of 2.0 D or higher.

ASTIGMATIČNE KERATOTOMIJE ASISTIRANE S FEMTOSEKUNDNIM LASERJEM

FEMTOSECOND LASER ASSISTED ASTIGMATIC KERATOTOMIES

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NAMEN: Analizirati postoperativne rezultate in zaplete pri pacientih po opravljenih roženičnih arkuatnih incizijah s femtosekundnim laserjem, katerim je bila v Očesnem centru Irman opravljena operacija zamenjava naravne očesne leče.
METODE: V tej prospektivni študiji smo pregledali podatke 33 oči (22 zaporednih pacientov od junija do decembra 2023), pri katerih so bile opravljene astigmatične keratotomije med operacijo zamenjave naravne očesne leče s pomočjo femtosekundnega laserja. Merili smo predoperativne manifestne, keratometrične, topografske in tomografske vrednosti astigmatizma in jih primerjali s postoperativnimi.
REZULTATI: Manifestne preoperativne vrednosti astigmatizma so se po posegu znižale povprečno iz 0,45 D (0,25 – 2,0 D) na 0,21 D (0,0 – 0,75 D), keratometrične iz 0,81 D (0,25 – 1,5 D) na 0,61 D (0,0 – 1,5 D), topografske iz 0,8 D (0,32 – 1,55 D) na 0,68 D (0,4 – 1,3 D) ter tomografske iz 0,89 D (0,2 – 2,2 D) na : 0,6 D (0,05 – 1.75 D). V petih primeru je prišlo do spremembe osi astigmatizma iz proti pravilu na po pravilu. Intra ali postoperativnih zapletov ni bilo.
ZAKLJUČEK: Astigmatične keratotomije asistirane s femtosekundnim laserjem so varne in uspešne pri zniževanju nizkega roženičnega astigmatizma, ko torične umetne znotrajočesne leče niso indicirane.

PURPOSE: To analyse postoperative results and complications in patients after corneal arcuate incisions who underwent femtosecond laser assisted crystalline lens exchange in Eye Clinic Irman.
METHODS: In this prospective study, data of 33 eyes (22 consecutive patients from June to December 2023) which underwent femtosecond laser assisted astigmatic keratotomies and crystalline lens exchange were analysed. Postoperative manifest, keratometric, topographic and total cornea results were compared with preoperative measurements.
RESULTS: Manifest preoperative astigmatic values were on average 0,45 D (0,25 – 2,0 D) and reduced postoperatively to 0,21 D (0,0 – 0,75 D), keratometric were reduced from average value of 0,81 D (0,25 – 1,5 D) to postoperative 0,61 D (0,0 – 1,5 D), topographic from 0,8 D (0,32 – 1,55 D) to 0,68 D (0,4 – 1,3 D) and total cornea values from 0,89 D (0,2 – 2,2 D) to 0,6 D (0,05 – 1.75 D). In 5 eyes astigmatism changed from against the rule to with the rule axis. There were no intra- or post-operative complications.
CONCLUSION: Femtosecond laser arcuate incisions are safe and effective method to reduce low corneal astigmatism when toric IOLs are not indicated.

ESCRS AKADEMIJA
ESCRS ACADEMY

TOPOGRAFIJA ROŽENICE

CORNEAL TOPOGRAPHY

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PRIMARNA POSTERIORNA KAPSULOREKSA

PRIMARY POSTERIOR CAPSULORHEXIS: TIPS AND TRICKS

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SEKUNDARNA VSTAVITEV IOL (INTRAOKULARNE LEČE)

SECONDARY IOL IMPLANTATION

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OPTIČNA KOHERENTNA TOMOGRAFIJA MAKULE PRED OPERACIJO SIVE MRENE

MACULAR OPTICAL COHERENCE TOMOGRAPHY BEFORE CATARACT SURGERY

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ROŽENICA

CORNEA

REGENERATIVNA MEDICINA IN ROŽENICA

REGENERATIVE MEDICINE AND THE CORNEA

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NOVOSTI V KIRURGIJI ROŽENICE

WHAT IS NEW IN THE FIELD OF CORNEAL SURGERY

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DSO, PRIMERJAVA DVEH TEHNIK DESCEMETOREKSE

DSO, COMPARISON OF TWO DESCEMETORRHEXIS TECHNIQUES

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NAMEN: Predstaviti pooperativne izide po posegih descemetorekse (DSO) pri očeh s Fuchsovo endotelno distrofijo (FECD), operiranih na Očesni kliniki v Ljubljani med leti 2019 in 2024.
METODE: Retrospektivna analiza dokumentacije 36 oči 31 pacientov z opravljenim posegom DSO na enem ali obeh očeh. Analizirali smo število centralnih endotelnih celic (cECC), pahmetrijo (CCT) in vidno ostrino (BCVA) po in pred operacijo. Paciente smo razdelili v dve skupini glede na metodo in obseg descemetorekse. Skupino kjer smo premer prilagodili področju gutt (skupina 1, 13 oči) in skupino s centralno descemetorekso velikosti 4-5 mm (skupina 2, 23 oči) Bolnike smo spremljali 12 – 58 mesecev, povprečni čas spremljanja znaša 31,8 mesecev.
REZULTATI: Zmožnost določitve ECD smo postavili kot eno od meril uspeha operativnega posega. V 1.skupini je izmed 13 oči pri 12 očeh bilo mogoče izmeriti cECC (92%) , v 2. skupini smo cECC izmerili pri 14 izmed 23 oči (60%). V 1. skupini, kjer je bila velikost descemetorekse osnovana na velikosti klinično izraženih gutt, je povprečni čas do vzpostavitve ECD znašal 9.9 (±13.4) meseca, v 2. skupini 5.9 (±5.0) meseca. Ob zadnjih kontrolah so vrednosti ECD znašale v 1. skupini od 554 do 1534 celic/mm2, povprečno 978.3 celic/mm2 (±344.4), v 2. skupini od 354 do 2332 celic/mm2, povprečno 1144.3 celic/mm2 (±637.0). Povprečna najboljša korigirana vidna ostrina (BSCVA) v 1. skupini je bila 0,62 pred posegom in 0,86 po posegu. Povprečno se je izboljšala za 0,24 (±0,18), v 2. skupini 0,38 pred in 0,62 po posegu. Povprečno se je izboljšala za 0,31 (±0,29). Zmanjšanje edema roženice so izmerili v 1. skupini pri 10 očeh, kar znaša 77% , v 2. skupini pri 18, kar znaša 78%. Pred posegom je povprečna vrednost pahimetrije znašala v 1. skupini 598.9µm (±61.4) , po posegu 576.9µm (±88.7). V povprečju se je centralno izmerjen edem roženice zmanjšal za 22.0µm. V 2. skupini je pred posegom povprečna vrednost pahimetrije znašala 631µm (±72.7) , po posegu 570.9µm (±91.3). V povprečju se je centralno izmerjen edem roženice zmanjšal za 59.2µm. V 1. skupini je pri enem očesu predvidena endotelna keratoplastika (DMEK) zaradi niskega števila EC in slabe vidne ostrine in eno oko ima predpisano topikalno terapijo z netarsudilom. V 2. skupini je imelo 5 oči ob vztrajanju edema, pred vzpostavitvijo merljive vrednosti ECD opravljen DMEK povprečno 6.4 mesece po primarnem posegu. V 2. skupini je pri 2 očeh pooperativno prišlo do CME, ki je v celoti izzvenel ob topikalni terapiji.
ZAKLJUČEK: DSO je minimalno invaziven poseg, ki predstavlja novejšo možnost zdravljenja nekaterih oblik Fuchsove endotelne distrofije roženice. Metoda je neodvisna od razpoložljivosti donorskih tkiv in izloči možnost zapletov, povezanih z zavrnitvijo presadka in dolgotrajnim kortikosteroidnega zdravljenjem. Naša študija kaže da za uspeh DSO ni nujna uporaba inhibitorjev rho kinaze.

PURPOSE: To present results of Descemet Striping Only (DSO) in Eyes with Fuchs' Endothelial Corneal Dystrophy (FECD) Operated at the Eye Clinic in Ljubljana Between 2019 and 2024.
METHODS: A retrospective analysis of documentation from 36 eyes of 31 patients who underwent DSO in one or both eyes. We analyzed central endothelial cell count (cECC), pachymetry (CCT), and best-corrected visual acuity (BCVA) before and after surgery. Patients were divided into two groups based on the method and extent of descemetorrhexis: one group where the diameter was adjusted to the area of guttata (Group 1, 13 eyes) and another group with a centrally round descemetorrhexis of 4-5 mm (Group 2, 23 eyes). Patients were followed for 12 to 58 months, with an average follow-up period of 31.8 months.
RESULTS: In total, endothelial cell count (cECC) was measurable after surgery in 26 eyes using specular biomicroscopy, representing 72% of operated eyes. The ability to determine ECD was set as one of the criteria for surgical success. In Group 1, cECC was measurable in 12 out of 13 eyes (92%), while in Group 2, it was measurable

in 14 out of 23 eyes (60%). The average time to ECD establishment was 9.9 (±13.4) months in Group 1 and 5.9 (±5.0) months in Group 2. At the last follow-up:Group 1: ECD values ranged from 554 to 1534 cells/mm², with an average of 978.3 cells/mm² (±344.4).Group 2: ECD values ranged from 354 to 2332 cells/mm², with an average of 1144.3 cells/mm² (±637.0). The average best-corrected visual acuity (BCVA) in Group 1 was 0.62 before surgery and 0.86 after surgery, with an average improvement of 0.24 (±0.18). In Group 2, BCVA was 0.38 before surgery and 0.62 after surgery, with an average improvement of 0.31 (±0.29). Reduction in corneal edema was observed in 10 eyes (77%) in Group 1 and 18 eyes (78%) in Group 2. Preoperative pachymetry:Group 1: 598.9µm (±61.4), postoperative 576.9µm (±88.7), with an average decrease in central corneal edema of 22.0µm.Group 2: 631µm (±72.7), postoperative 570.9µm (±91.3), with an average decrease in central corneal edema of 59.2µm. In Group 1, one eye required planned endothelial keratoplasty (DMEK) due to low EC density and poor visual acuity, while one eye was prescribed topical therapy with netarsudil. In Group 2, five eyes underwent DMEK due to persistent edema before the establishment of measurable ECD values, with an average of 6.4 months post-primary procedure. Additionally, two eyes developed postoperative cystoid macular edema (CME), which fully resolved with topical therapy.

CONCLUSION: Our retrospective study compared two methods of treating FECD with Descemetorrhexis (DSO). The method in which we removed or attempted to remove the visibly altered Descemet's membrane regardless of the removed membrane size showed better best-corrected visual acuity and a higher percentage of eyes where endothelial cell count could be measured via specular microscopy. However, it resulted in lower endothelial cell density, likely due to the larger area that needed coverage by endothelial cells in Group 1, and a smaller reduction in pachymetry, possibly because the preoperative pachymetry was lower. There is increasing proof that some patients with central Fuchs' phenotype benefit from removal of affected tissue only. The optimal patient selection for Descemet stripping only is still under research. In our case series the early stage of central Fuchs' dystrophy, pseudophakia and good patient cooperation were connected to a favourable visual outcome. DSO is a minimally invasive procedure that represents a novel treatment option for certain forms of Fuchs' endothelial corneal dystrophy. This method is independent of donor tissue availability and eliminates the risk of graft rejection and the need for prolonged corticosteroid treatment. Our study suggests that the use of Rho Kinase inhibitors is not essential for the success of DSO.

DMEK Z MLADIMI DONORJI – ZAČETNE IZKUŠNJE IN TEHNIČNI PRISTOPI

DMEK WITH YOUNG DONORS – INITIAL EXPERIENCE AND TECHNICAL APPROACHES

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NAMEN: Endotelijska lamelarna keratoplastika s Descemetovo membrano in endotelijem (DMEK) postaja zlati standard za zdravljenje endotelijskih bolezni roženice. V klinični praksi pogosto raje uporabimo donorske roženice starejših oseb, saj pri mlajših donorjih opažamo izrazitejše zvijanje in s tem zahtevnejšo namestitev presadka. Namen tega dela je predstaviti začetne izkušnje z mladimi donorji in ključne kirurške korake, ki pripomorejo k uspešni izvedbi posega.
METODE: Od decembra leta 2023 smo pri seriji bolnikov z endotelijskimi okvarami roženice (npr. Fuchsova distrofija) uporabili DMEK presadke, odvzete pretežno od mlajših donorjev (povprečna starost < 45 let). Presadek smo pripravili tik pred operacijo z luščenjem Descemetove membrane in barvanjem tkiva. Descemetorekso smo opravili pod »fluid-air« izmenjavo. Vstavitev v sprednji prekat je potekala z uporabo injektorja, pri čemer smo v injektorju skušali ustvariti “double-roll”. Za razgrnitev presadka smo uporabili standardno tapping tehniko s izredno plitkim prekatom in digitalnim retrobulbarnim pritiskom. Na koncu je bila plinska tamponada z 20% SF6 aplicirana za približno 10 minut pri povišanem očesnem tlaku. Bolniki so nato 3–5 dni upoštevali navodilo o hrbtnem pozicioniranju s plinom v sprednjem prekatu rahlim rotiranjem glave.
REZULTATI: Pri večini primerov je bil presadek uspešno razgrnjen, čeprav sta priprava in nato pozicioniranje mladega tkiva običajno zahtevali daljši čas zaradi čvrstejše zvitosti. Ponovna plinska tamponada (rebubbling) je bila potrebna redko, vidna ostrina pa se je pri večini bolnikov povečala najmanj tri vrstice po Snellenu. Kratkoročne stopnje preživetja presadkov in števila preživetih endotelijskih celic so primerljive s tistimi pri uporabi starejših donorjev, ob ustreznem kirurškem pristopu pa ni opaziti pomembnejših dodatnih zapletov ali pomenljivega povišanja stopnje rebubblinga.
ZAKLJUČEK: DMEK z mladimi donorji je tehnično zahtevnejši zaradi izrazitejšega zvitja presadka, vendar so končni izidi odlični, z nekaj več pozornosti pri pripravi in potrpežljivosti pri razgrnitvi mladega tkiva. Izkušnje potrjujeo podatke iz literature, da ob skrbno prilagojenih kirurških korakih mlajša donorska roženica ne pomeni signifikantno višjega tveganja za odstop presadka ali izgubo endotelijskih celic.

PURPOSE: Endothelial lamellar keratoplasty with Descemet’s membrane and endothelium (DMEK) is becoming the gold standard for treating endothelial diseases of the cornea. In clinical practice, corneas from older donors are often preferred because younger donors tend to exhibit more pronounced scrolling, making graft placement more difficult. The aim of this work is to present our initial experiences with young donors and the key surgical steps that facilitate a successful procedure.
METHODS: Beginning in December 2023, we performed DMEK on a series of patients with endothelial pathologies of the cornea (e.g., Fuchs dystrophy), primarily using donor tissue from younger individuals (average donor age < 45 years). The graft was prepared immediately before surgery by peeling off Descemet’s membrane and staining the tissue. Descemetorhexis was carried out under a “fluid-air” exchange. The graft was inserted into the anterior chamber using an injector, aiming to achieve a “double-roll” configuration. Unfolding of the graft was accomplished using a standard tapping technique in an extremely shallow chamber, combined with digital retrobulbar pressure. Finally, a 20% SF_6 tamponade was applied for about 10 minutes at elevated intraocular pressure. Patients were then instructed to remain in a supine position for 3–5 days, with slight alternating head rotation.

RESULTS: In most cases, the graft was successfully unfolded, although both graft preparation and positioning of younger tissue typically required more time due to its firmer scrolling tendency. Additional gas tamponade (rebubbling) was rarely required, and visual acuity increased by at least three Snellen lines in the majority of patients. Short-term graft survival rates and endothelial cell counts were comparable to those achieved with older donors; with an appropriate surgical approach, no notable additional complications or significant increase in rebubbling rates were observed.
CONCLUSION: DMEK with younger donors is technically more challenging due to the graft's more pronounced scrolling, but final outcomes are excellent when extra care is taken in graft preparation and when unfolding the younger tissue. Our experience supports data from the literature indicating that, with carefully adapted surgical techniques, younger donor corneas do not present a significantly higher risk of graft detachment or endothelial cell loss.

NEVROPSIN, TRPV4 IN ZNOTRAJCELIČNI KALCIJ POSREDUJEJO INTRINZIČNO FOTOSENZITIVNOST V CELICAH ROŽENIČNEGA EPITELA

NEUROPSIN, TRPV4 AND INTRACELLULAR CALCIUM MEDIATE INTRINSIC PHOTOSENSITIVITY IN CORNEAL EPITHELIAL CELLS

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NAMEN: Opredeliti intrinzično fototransdukcijo v roženičnem epitelu in njeno vlogo pri znotrajcelični in vnetni signalizaciji.
METODE: Slikanje z znotrajceličnim kalcijem (Ca2+ imaging) v celicah roženičnega epitela in odluščenem celotnem epitelu smo kombinirali z molekularnimi, biokemičnimi in farmakološkimi testi ter študijami z odstranjenima kopijema genov. Zanimalo nas je kakšno vlogo imajo spremembe koncentracije znotrajceličnega kalcija, povzročene z UVB sevanjem, na sproščanje citokinov, kemokinov in proteinov z vplivom na remodelacijo celičnega matriksa. Primerjali smo razlike med celicami divjega tipa miši in celicami iz Opn5-/- in Trpv4-/- živali.
REZULTATI: UVB sevanje in aktivacija TRPV4 sta povzročila izločanje IL-1β, IL-17, matriksnih metaloproteinaz MMP-3 in MMP-9 in timusnega stromalnega limfopoetina (TSLP) iz celic roženičnega epitela. Zvišanje koncentracije znotrajceličnega kalcija (Ca2+), povzročene z UVB sevanjem, je bilo delno zavrto s farmakološko blokado TRPV4 kanalov, odstranitvijo kopij genov za TRPV4 kanal ali odstranitvijo kalcijevih ionov iz kontrolne fiziološke raztopine. Odzivi Ca2+, povzročeni z UVB, so bili pomembno znižani z delecijo OPN5 in inhibicijo signaliziranja s fosfolipazo C ter zavrti v celicah z izčrpanimi zalogami znotrajceličnih kalcijevih ionov.
ZAKLJUČEK: Celice roženičnega epitela sesalcev so intrinzično fotoobčutljive. UVB sevanje zaznavajo preko nevropsina, fosfolipaze C ter pri miših tudi deloma preko TRPV4 komponente. Aktivacija TRPV4 in UVB transdukcija sta povezani s sproščanjem provnetnih citokinov, nociceptivnih interlevkinov in matriksnih metaloproteinaz. S TRPV4 povzročeno sproščanje citokinov lahko prispeva k bolečini povzročeni z mehanskimi poškodbami, intrinzična UVB občutljivost pa lahko pripomore k zaščitnem vedenju in posledični zaščiti očesa pred škodljivim UVB sevanjem.

PURPOSE: To investigate intrinsic phototransduction in the corneal epithelium and its role in intracellular and inflammatory signaling.
METHODS: Optical imaging in isolated corneal epithelial cells (CECs) and debrided epithelia was combined with molecular, biochemical, pharmacological assays and gene deletion studies to track UVB-induced calcium signaling and release of cytokines, chemokines and matrix remodeling enzymes. Results from wild type mouse CECs were compared to data obtained from Opn5-/- and Trpv4-/- cells.
RESULTS: UVB stimuli and TRPV4 activity induced epithelial release of IL-1β, IL-17, matrix metalloproteinases MMP-3/MMP-9, and thymic stromal lymphopoietin (TSLP). UVB stimuli evoked [Ca2+]i elevations in dissociated mouse CECs that were partially reduced by inhibition of TRPV4 channels, Trpv4 knockdown and replacement of control saline with Ca2+-free saline. UVB-induced Ca2+ responses were significantly suppressed by OPN5 deletion and by inhibition of phospholipase C signaling, and responses were abrogated in cells with depleted intracellular Ca2+ stores.

CONCLUSIONS: Mammalian CECs are intrinsically and constitutively photosensitive. UVB photons are transduced by neuropsin, phospholipase C and CICR signaling, with mouse but not human CE transduction exhibiting a UVB-sensitive TRPV4 component. TRPV4 activity and UVB transduction are linked to cell-autonomous release of proinflammatory, matrix remodeling and nociceptive interleukins and MMPS. TRPV4-induced cytokine release may contribute to the pain induced by mechanical injury of the cornea and CEC photosensing may alert and protect the visual system from ultraviolet B (UVB) radiation -induced snow blindness, injury, vision loss and cancer.

FOTOTERAPEVTSKA LASERSKA KERATEKTOMIJA PRI ZDRAVLJENJU BOLEZNI SPREDNJEGA DELA ROŽENICE

PHOTO-THERAPEUTIC LASER KERATECTOMY FOR TREATMENT OF SUPERFICIAL CORNEAL DISORDERS

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NAMEN: Predstaviti fototerapevtsko keratektomijo (PTK) kot učinkovito metodo za zdravljenje različnih bolezni sprednjega dela roženice s pregledom literature in prikazom naših izkušenj.
METODE: PTK je kirurški pristop, kjer se s pomočjo excimer laserja preoblikuje povrhnji del roženice, zato da se spodbudi nastajanje trdnejših povezav med roženičnim epitelom in Bowmanovo membrano pri recidivirajočih roženičnih erozijah; oziroma zato, da se zmanjšajo nepravilnosti ali motnjave sprednjega dela roženice, ki nastanejo po poškodbah ali v sklopu roženičnih degeneracij oziroma roženičnih distrofij. PTK se lahko uporabi tudi za delno regularizacijo površine roženice pri pacientih s keratokonusom ob ali po roženičnem CXLu. Način PTK se prilagodi glede na osnovno roženično bolezen, ki se jo zdravi. Ob ugodnih pogojih na roženice lahko ob PTK opravimo tudi refraktivno korekcijo dioptrije očesa (PRK/SRK).
REZULTATI: Po pregledu naše elektronske kartoteke smo s PTK oz. PRK/SRK od januarja 2006 do septembra 2024 zdravili 72 pacientov. Najpogosteje (56%) smo se odločili za PTK pri pacientih z napredujočim keratokonusom, kjer smo poleg PTK opravili tudi roženični CXL. V 26,7% smo s PTK zdravili paciente s ponavljajočimi erozijami roženice. Ostalo so bili pacienti z roženičnimi distrofijami in motnjavami roženice po vnetju ali poškodbah. Ko smo s PTK zmanjšali nepravilnosti/motnjave na površini roženice, so se izrazito zmanjšali moteči simptomi (dvojni vid, razpršenost svetlobe ipd.) in/ali prišlo je do izboljšanja vidne ostrine. PTK zaradi ponovnega pojava erozije je bilo potrebno ponoviti pri 2 pacientih. Ponovitev PTK je bila potrebna tudi pri granularni roženični distrofiji zaradi ponovnega upada vidne ostrine.
ZAKLJUČEK: PTK je pomemben kirurški pristop k zdravljenju različnih bolezni sprednjega dela roženice. Omogoča nam zmanjšanje motečih simptomov, ki se pojavljajo ob teh boleznih in pomembno vplivajo na kvaliteto življenja prizadetih pacientov. Zaradi narave bolezni je potrebno PTK občasno ponoviti.

PURPOSE: To present excimer laser phototherapeutic keratectomy (PTK) as a successful surgical approach in treatment of various superficial corneal disorders and experience with this method in Eye Clinic Irman.
METHODS: PTK uses excimer laser to meticulously ablate or reshape a superficial part of the cornea in order to: 1. remove enough of the superficial Bowman's layer to permit formation of a new basement membrane with adhesion structures that are weakened in recurrent erosion syndrome; 2. reduce/remove irregularities or opacities in a superficial part of the cornea due to corneal degenerations, dystrophies or trauma 3. to partially regularise corneal surface in patients with keratoconus with or after corneal CXL. The surgical approach is adapted to the corneal disorder being treated. Correction of refraction with excimer laser (PRK/SRK) can sometimes be performed together with PTK.
RESULTS: Using our electronic medical records we have identified 72 patients that have been treated with PTK in our clinic since 2006. In most cases (56 %) PTK has been used in patients with keratoconus at the time of CXL, in 26,7% for treatment of recurrent erosion syndrome and in 17,3% for treatment of superficial irregularities and opacities due to trauma, scarring after infection and corneal dystrophies. PTK has been found to be able to effectively reduce irregularities/opacities on the corneal surface and consequently reduce debilitating symptoms. PTK affects the refractive status of the treated patient. Due to the nature of the corneal disorders under treatment, PTK may have to be repeated.
CONCLUSION: PTK has been found to be an effective treatment for a variety of superficial corneal disorders. It reduces debilitating symptoms and improves quality of vision and life. Due to recurring nature of certain corneal disorders, it may be necessary to repeat PTK.

POJAVLJANJE, ZDRAVLJENJE IN SPREMLJANJE CISTOIDNEGA MAKULARNEGA EDEMA PO DMEK

OCCURRENCE, TREATMENT AND FOLLOW UP OF CYSTOID MACULAR OEDEMA AFTER DMEK

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NAMEN: Pojavljanje in obravnava cistoidnega makularnega edema (CME) po endotelni keratoplastiki z Descemetovo membrano (DMEK).
METODE: Retrospektivna raziskava na Očesni kliniki UKC Ljubljana, pregled DMEK posegov s strani SSP pri dveh najbolj pogostih diagnozah v 9-ih letih glede na pojav pooperativnega CME.
REZULTATI: Vključenih je bilo 195 zaporednjih DMEK posegov pri distrofiji Fuchs ali bulozni keratopatiji, s vsaj 8-mesečnim sledenjem, pri bolnikih brez patologije makule. CME se je pojavil pri 24 očeh (12.3%) 22 pacientov, povprečno 4 mesece po posegu. Pegled je potrdil padec vidne ostrine brez sprememb ročenice ali druge opacifikacije v vidni osi, OCT makule je prikazal CME. Srednja starost vseh je bila 70.3, SD9.7; pri skupini s CME 74.04, SD 7.7 let. Korelacija starosti s pojavom CME je bila blaga in nesignifikantna. Signifikantno je bila s pojavom CME povezana večja predoperativna debelina roženice, in sicer 701 µm, SD 121 µm v skupini brez CME, napram 778 µm, SD 110 µm v skupini s CME, p=0.002. Prisotnost sladkorne bolezni, sočasna operacija katarakte, pooperativno dodajanje plina niso korelirali s pojavom CME. Zdravljenje CME je primarno vključevalo topične kortikostreoide 4-6x in topične NSAID 2-3x dnevno. Kontrolni pregledi na 2 tedna so vključevali OCT makule. V primeru zmanjševanja CME je terapija ostala topična; v nasprotnem primeru je bil apliciran kortikosterod intravitrealno. Anatomski rezultat je bil pri vseh ugoden, vidna ostrina se je pri vseh izboljšala, pri 50% je bila ≥0.8.
ZAKLJUČKI: CME po DMEK ima višjo incidenco kot po operaciji katarakte. Lahko so pojavi v daljšem pooperativnem obdobju. Pri vseh bolnikih s simptomatskim in dokazanim padcem vidne ostrine ob normalnem stanju prozornosti vidne osi je priporočljiv OCT makul. Zdravljenje je enako kot pri CME po operaciji katarakte in je bilo uspešno. Ker je večja predoperativna debelina roženice pomemben dejavnik tveganja, je smiselno k DMEK prisotopiti že v zgodejših stadijih dekompenzacije endotela roženice.

PURPOSE: Occurrence and management of cystoid macular oedema (CME) after Descemet membrane endothelial keratoplasty (DMEK).
METHODS: Retrospective study at the University Eye Hospital UKC Ljubljana of DMEK procedures performed by a single surgeon (SSP) for the two most frequent diagnoses in 9 years period according to occurrence of postoperative CME.
RESULTS: 195 consecutive DMEK procedures in patients with Fuchs' dystrophy or bullous keratopathy, with postoperative follow up of at least 8 months, and without macular pathology were included in the study. CME occurred in 24 eyes (12.3%) of 22 patients after a mean of 4 moths. The exam confirmed deterioration of visual acuity without any corneal changes or other opacification in the visual axis, and OCT of macula reviled CME. Mean overall age was 70.3, SD9.7, while in the CME group it was 74.04, SD7.7 years, correlation of age to CME occurrence was weak and nonsignificant. Higher preoperative cornea thickness correlated significantly to CME: 701µm, SD121µm in nonCME group, 778 µm, SD 110µm in CME group, p=0.002, while diabetes, concurrent cataract surgery, or postoperative rebubble did not correlate. Initially CME treatment included topical corticosteroids 4-6x and topical NSAIDs 2-3x a day. Follow up was scheduled every two weeks and included OCT of macula. If the CME was declining, topical treatment was continued, in the opposite case steroids were applied intravitreally. All patients achieved good anatomical result, as well as improvement of the visual acuity, which was ≥0.8 Snellen in 50%.

CONCLUSIONS: The incidence of CME after DMEK is higher and it can occur in a longer postoperative period compared to CME after cataract surgery. In patients with visual acuity decrease without opacification in the visual axis, an OCT of the macula is recommended. The treatment is similar to the treatment of CME after cataract surgery and was proved to be successful. Since higher preoperative corneal thickness turned out to be an important risk risk factor for postoperative CME, early DMEK should be considered in the course of corneal decompensation.

PREVALENCA KERATITISOV V SPLOŠNI BOLNIŠNICI NOVO MESTO V LETIH 2023-2024

PREVALENCE OF KERATITIS IN GENERAL HOSPITAL NOVO MESTO IN YEAR 2023 AND 2024

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NAMEN: Preučiti podatke pacientov, zdravljenih zaradi keratitisa v zadnjih dveh letih v Splošni bolnišnici Novo mesto.
METODE: Iz Birpisa sva pridobili podatke vseh pacientov, katerim so bile v letih 2023 in 2024 postavljene sledeče diagnoze: H16.0 (Ulcus corneae), H16.1 (površinsk keratitisi), H16.3 (intersticijski in globoki keratitis), H16.8 (Keratitis druge vrste) in H16.9 (Keratitis, neopredeljen).Pregledanih je bilo 236 primerov. Izključili sva neustrezno postavljene diagnoze, keratopatijo v sklopu suhega očesa in ponovljene paciente.
REZULTATI: V letih 2023 in 2024 smo v Splošni bolnišnici Novo mesto zdravili 109 pacientov s keratitisom, od tega 66 žensk in 43 moških. Pacienti so bili stari od 2 mesecev do 83 let, povprečna starost je bila 48 let. 36 je bilo nosilcev kontaktnih leč (32%). Pred prihodov v našo bolnišnico je bilo zdravljenih 8 pacientov. Bris je bil odvzet pri 42 pacientih, od tega pri 5 pacientih pred prihodom k nam (na Očesni kliniki ali v tujini). Mikroorganizmi so porasli pri 31% odvzetih brisov, največkrat porasel mikroorganizem je bil P. aeruginosa, temu sledi S. aureus in S. pneumoniae. Pseudomonas aeruginosa je porasel izključno pri nosilcih kontaktnih leč. Narejeni sta bili 2 mikrobiološki analizi kontaktnih leč, v obeh primerih so porasli 3-4 mikroorganizmi. Trajanje topikalnega antibiotičnega zdravljenja je bilo v povprečju 3 tedne, recidivi so se pojavili pri 5 pacientih. 12 pacientov je potrebovalo sistemsko terapijo. Opravljeni sta bili 2 telefonski konzultaciji z Očesno kliniko in 6 napotitev na Očesno kliniko, razlogi so obsegali perforacijo ulkusa, hipopion, neizboljšanje pri otroku, nizko starost (2 meseca) in poslabšanje kljub dvotirni antibiotični terapiji.
ZAKLJUČEK: Ugotovili smo, da so mikroorganizmi porasli le pri tretjini odvzetih brisov. Mikrobiološka analiza kontaktnih leč je bila v smislu porasta mikroorganizmov večkrat uspešnejša, vendar so porasli tudi mikroorganizmi, ki na roženici niso povzročili vnetja in jih antibiotično oz. antiglivično ni bilo treba pokriti. Pri nosilcih kontaktnih leč je bilo zaslediti povečan porast Pseudomonasa aeruginose, zato bi bilo smiselno izboljšati ozaveščanje glede higiene in nošnje KL, voditi podatke o dolžini nošenja KL, kako pogosto ti pacienti menjajo posodico za leče in kako pogosto leče čistijo. V prihodnosti lahko pričakujemo tudi več pojavov keratitisov ali drugih očesnih vnetij zaradi uporabe umetnih trepalnic, pri nas smo v zadnjih 2 letih imeli dve takšni pacientki.

PURPOSE: To examine the data of patients treated for keratitis in the past two years at the General Hospital Novo mesto.
METHODS: From Birpis, we obtained data on all patients who were diagnosed with the following conditions in 2023 and 2024: H16.0 (Corneal ulcer), H16.1 (Superficial keratitis), H16.3 (Interstitial and deep keratitis), H16.8 (Other types of keratitis), and H16.9 (Unspecified keratitis). A total of 236 cases were reviewed. We excluded improperly diagnosed cases, keratopathy as part of dry eye syndrome, and repeated patients.
RESULTS: In 2023 and 2024, the General Hospital Novo mesto treated 109 patients with keratitis, of which 66 were women and 43 were men. Patients ranged in age from 2 months to 83 years, with an average age of 48 years. 36 patients were contact lens wearers (32%). Eight patients were treated before arriving at our hospital. Swabs were taken from 42 patients, of which 5 were taken before coming to us (at the Eye Clinic or abroad). Microorganisms grew in 31% of the collected swabs, with the most common being P. aeruginosa, followed by S. aureus and S. pneumoniae. Pseudomonas aeruginosa was exclusively found in contact lens wearers. Two microbiological analyses of contact lenses were performed, in both cases, 3-4 microorganisms grew. The duration of topical

antibiotic treatment averaged 3 weeks, with recurrences occurring in 5 patients. Twelve patients required systemic therapy. There were 2 telephone consultations with the Eye Clinic and 6 referrals to the Eye Clinic, the reasons included ulcer perforation, hypopyon, no improvement in a child, young age (2 months), and worsening despite dual antibiotic therapy.

CONCLUSION: We found that microorganisms grew in only one-third of the collected swabs. The microbiological analysis of contact lenses was more successful in terms of microorganism growth, but microorganisms that did not cause inflammation on the cornea and did not require antibiotic or antifungal treatment also grew. There was an increased growth of Pseudomonas aeruginosa in contact lens wearers, so it would be advisable to improve awareness regarding hygiene and contact lens wear, keep records of the length of contact lens wear, and how often these patients change their lens cases and clean their lenses. In the future, we can also expect more cases of keratitis or other eye inflammations due to the use of artificial eyelashes; in the last two years, we have had two such patients.

VODENJE PACIENTOV PO CXL

MANAGEMENT OF PATIENTS AFTER CXL

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NAMEN: Keratokonus (KC) je progresivna bolezen roženice, ki vodi do poslabšanja vida zaradi tanjšanja roženice in iregularnega astigmatizma. Cross-linking (CXL) je poseg s katerim učinkovito zaustavimo napredovanje keratokonusa z učvrstitvijo roženice. Kljub učinkovitosti CXL je pri stabilizaciji roženice ključno dolgoročno spremljanje pacientov za zagotavljanje uspešnosti posega in odkrivanja morebitnih znakov nadaljnjega napredovanja bolezni.
METODE: Ključni parametri za spremljanje napredovanja bolezni vključujejo topografijo roženice, s katero ocenimo obliko in ukrivljenost roženice ter pahimetrijo, ki meri debelino roženice. Spremembe v vidni ostrini in refraktivnih napakah, zlasti astigmatizmu in miopiji, so prav tako pomembni kazalniki. Napredna slikovna diagnostika, kot sta Scheimpflugova tomografija, optična koherentna tomografija (OCT) in tomografija sprednjega segmenta (AS-OCT), omogočajo podrobnejšo oceno debeline roženice, strukturne in biomehanske spremembe roženice. Redni kontrolni pregledi zagotavljajo celovito sliko zdravja roženice po CXL, kar omogoča pravočasno ukrepanje, če je to potrebno.
REZULTATI: Topografija roženice, zlasti spremembe v osrednjem delu roženice in povečanje ukrivljenosti, so ključni kazalniki za odkrivanje napredovanja keratokonusa po CXL. Pahimetrija roženice v večini primerov kaže na stabilizacijo ali minimalno tanjšanje, kar nakazuje na uspeh zdravljenja. Vidna ostrina in refraktivne napake se običajno po posegu izboljšajo ali ostanejo stabilne, pri čemer je pogosto vidno tudi znižanje astigmatizma. Vendar pa se v manjšem delu bolnikov lahko opazi rahlo napredovanje keratokonusa, kar je razvidno iz sprememb v topografiji in spremembah refraktivnih napak. Uporaba OCT sprednjega segmenta omogoča dodaten vpogled v strukturne spremembe roženice, ki niso vidne s tradicionalnimi metodami.
ZAKLJUČEK: Topografija roženice, pahimetrija in merjenje refraktivnih napak so ključni parametri za spremljanje napredovanja keratokonusa po CXL. Napredne slikovne tehnike, kot je OCT sprednjega segmenta, nudijo natančnejši vpoglede v strukturne in biomehanske spremembe roženice, kar še dodatno pomaga pri odkrivanju napredovanja bolezni. Redno spremljanje, ki vključuje te parametre, je ključno za zagotavljanje dolgoročne učinkovitosti CXL in odkrivanje morebitnega napredovanja bolezni.

PURPOSE: Keratoconus (KC) is a progressive corneal ectasia that leads to visual impairment due to corneal thinning and irregular astigmatism. Corneal collagen crosslinking (CXL) has emerged as an effective treatment to halt the progression of keratoconus by strengthening the corneal tissue. Despite the efficacy of CXL in stabilizing the cornea, long-term follow-up is essential to ensure the procedure's success and to detect any signs of continued progression.
METHODS: Key parameters for tracking the progression include corneal topography, which evaluates the shape and curvature of the cornea, and pachymetry, which measures corneal thickness. Changes in best-corrected visual acuity (BCVA) and refractive errors, particularly astigmatism and myopia, are also important indicators. Advances in imaging technologies such as Scheimpflug imaging, optical coherence tomography (OCT), and anterior segment optical coherence tomography (AS-OCT) allow for more detailed assessments of corneal thickness, structural integrity and biomechanical changes. Regular follow-up appointments incorporating these parameters provide a comprehensive picture of corneal health post-CXL, enabling timely interventions if needed.
RESULTS: Corneal topography, specifically changes in the central corneal curvature and steepening are critical for detecting progression after CXL. Corneal pachymetry shows stabilization or minimal thinning in most cases, indicating treatment success. Best corrected visual acuity (BCVA) and refractive error measurements generally improve or remain stable, with astigmatism reduction observed in a significant proportion of patients. However, in a small subset of patients, slight progression of keratoconus can be observed, as evidenced by topographic

changes and refractive error shifts. The use of OCT provides additional insights into corneal structural changes that are not apparent through traditional methods.
CONCLUSION: Corneal topography, pachymetry, and refractive error measurements are essential parameters for monitoring keratoconus progression after CXL. Advanced imaging techniques such as OCT offer valuable insights into the structural and biomechanical changes of the cornea, further aiding in the detection of progression. Regular follow-up incorporating these parameters is crucial to ensure the long-term effectiveness of CXL and to detect any residual disease progression.

SINDROM SUHEGA OČESA: IS THIS THE REAL LIFE OR IS THIS JUST FANTASY?

DRY EYE SYNDROME: IS THIS THE REAL LIFE OR IS THIS JUST FANTASY?

Tomislav Šarenac
Sponsored by Medis, Slovenia

MLADI OFTALMOLOGI

YOUNG OPHTHALMOLOGISTS

BREME SLEPOTE IN SLABOVIDNOSTI V SLOVENIJI – PRELIMINARNI REZULTATI ANALIZE STROŠKOV BOLEZNI

ECONOMIC BURDEN OF BLINDNESS AND VISION IMPAIRMENT IN SLOVENIA - PRELIMINARY COST ANALYSIS RESULTS

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NAMEN: Oceniti izbrane elemente ekonomskega bremena slepote in slabovidnosti v Sloveniji.
METODE: Preliminarna analiza neposrednih zdravstvenih stroškov in stroškov zaradi absentizma v letu 2022, temelječa na podatkih Zavoda za zdravstveno zavarovanje Slovenije. Bolniki so bili vključeni v raziskavo na podlagi hospitalizacij z diagnozami H54.0–H54.3 (MKB-10) in/ali uporabe specifičnih medicinskih pripomočkov za slepe/slabovidne.
REZULTATI: Neposredni zdravstveni stroški za 4.153 bolnikov so leta 2022 dosegli 5.5 milijona €. 80,3 % izdatkov je bilo povezanih neposredno z očesnimi boleznimi, 17,1 % s poškodbami in 2,5 % z depresijo in anksioznimi motnjami. Največji delež neposrednih stroškov očesnih bolezni je nastal z zunajbolnišničnimi zdravstvenimi obravnavami, ki zajemajo storitve specialističnih oftalmoloških ambulant, celostne oftalmološke ambulantne obravnave, rehabilitacijo in obiske na primerni ravni (52,8 %), sledijo pa zdravila in medicinski pripomočki (41,6%) ter hospitalizacije (5,6%) . Letni stroški absentizma so znašali med 298.885 € in 342.192 €.
ZAKLJUČEK: Prva preliminarna analiza izbranih elementov stroškov slepote in slabovidnosti v Sloveniji kaže na občutno ekonomsko breme ter potrebo po vlaganjih v preventivo, zgodnje odkrivanje in obvladovanje bolezni za obvladovanje naraščanja bremena teh stanj in izboljšanje kakovosti življenja bolnikov in njihovih svojcev.

PURPOSE: To assess selected aspects of the economic burden of blindness and vision impairment in Slovenia.
METHODS: A preliminary analysis of direct healthcare and absenteeism costs in 2022, based on population-level reimbursement data from the Health Insurance Institute of Slovenia. The study included patients hospitalized with diagnoses H54.0-H54.3 (ICD-10) and/or those using specific medical aids for blindness and vision impairment.
RESULTS: In 2022, the direct healthcare costs for 4,153 patients amounted to €5.5 million. The majority (80.3%) of these expenditures (80.3%) were directly related to eye diseases, 17.1% to injuries and 2.5% to depression and anxiety disorders. The largest share of direct healthcare costs related to eye diseases was attributed to outpatient healthcare services, including specialized ophthalmology clinics, comprehensive ophthalmic outpatient care, rehabilitation, and primary-level visits (52.8%), followed by medications and medical devices (41.6%) and hospitalizations (5.6%). Annual absenteeism costs ranged between €298,885 and €342,192.
CONCLUSION: Preliminary analysis of the selected aspects of the economic burden of blindness and vision impairment in Slovenia highlights a significant financial burden and underscores the need for investments in prevention, early detection, and disease management to curb the rising impact of these conditions and improve quality of life for patients and their families.

KONJUNKTIVITIS V NEONATALNEM IN ZGODNJEM DOJENČKOVEM OBDOBJU POVZROČEN Z BAKTERIJO CHLAMYDIA TRACHOMATIS: 5-LETNA KOHORTNA ANALIZA

NEONATAL AND EARLY INFANTILE CONJUNCTIVITIS CAUSED BY CHLAMYDIA TRACHOMATIS: A 5-YEAR COHORT ANALYSIS

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NAMEN: Predstaviti breme očesnih okužb, povzročenih z bakterijo Chlamydia trachomatis v neonatalnem obdobju ter pomen zgodnje prepoznave in zdravljenja.
METODE: Retrospektivno (december 2019-december 2024) smo analizirali podatke 201 otrok ≤2 meseca starosti, ki so bili zaradi znakov konjunktivitisa obravnavani v UKC Ljubljana: na Očesni kliniki/Pediatrični kliniki/Kliničnem oddelku za perinatologijo. Laboratorijska analiza je bila izvedena z metodo kultivacije za dokaz patogenih bakterij, s testom PCR smo ugotavljali klamidijsko okužbo.
REZULTATI: Pri 22/201(10.9%, 16 deklic : 6 dečkov) otrocih s klinično diagnozo konjunktivitisa je bil bris veznice pozitiven na C.trachomatis. 2/22(9.1%) sta imela ko-infekcijo z drugo patogeno bakterijo. 20/22(90.9%) otrok je imelo zgolj očesne, 2(9.1%) pa tudi sistemske znake okužbe. Starostni razpon ob pojavu konjunktivitisa je bil ≤7dni pri 13/22(59.1%), 8-14 dni pri 9/22(40.9%). Obojestranski konjunktivitis je bil opažen pri 12/22(54.6%); pri 5/12 sprva z enostranskimi znaki. Konjunktivalna injekcija veznice in purulenten očesni izloček sta bila prisotna pri 22/22(100%), 13/22(59.1%) otrok je imelo hkrati tudi hemoragičen izloček, oteklina vek je bila prisotna pri 21/22 (95.5%). Redkejši znaki so bili: hemoza pri 3/22(13.6%), papilofolikularna reakcija pri 3/22(13.6%), veznične membrane/psevdomembrane pri 4(18.2%) otrocih. Vseh 22 otrok je bilo zdravljenih z azitromicinom (20 mg/kg/24h) 3dni per os in z azitromicinom v obliki kapljic 3 dni 2x/dan. Empirični topikalni antibiotik je prejelo 15/22(68.2%) otrok, izbor ni bil v nobenem od primerov učinkovit proti okužbi s C.trachomatis. En otrok je bil na terciarni ravni do prejema izvida brisa veznice zdravljen s sistemskim antibiotikom zaradi kliničnega suma na preseptalni celulitis. Pri 5 materah so bili anamnestično ugotovljeni simptomi suspektni za klamidijsko okužbo matere v nosečnosti, 1 je navajala prebolelo pelvično vnetno bolezen v preteklosti.
ZAKLJUČEK: C.trachomatis je pomemben infektivni vzrok neonatalne oftalmije pri nas. Presejalno testiranje nosečnic se v Sloveniji ne izvaja, učinkovita topikalna profilaksa za novorojenčke ni na voljo. Očesni znaki okužbe so nespecifični in se prepletajo s klinično sliko okužbe z drugimi patogeni, kar lahko ob neustreznem zdravljenju in pozni identifikaciji vodi v zaplete. Pri dojenčkih, obravnavanih v UKC Ljubljana rekurente okužbe nismo beležili, kar pripisujemo učinkovitemu protokolu zdravljenja s sistemskim antibiotikom.

PURPOSE: To evaluate the burden of ocular infections caused by C. trachomatis in the neonatal period and to emphasize the importance of early recognition and treatment.
METHODS: We conducted a retrospective analysis (December 2019–December 2024) of 201 infants aged ≤2 months who presented with signs of conjunctivitis at the University Medical Centre Ljubljana: Eye Clinic/Paediatric Clinic/Department of Perinatology. Laboratory methods included bacterial cultures and polymerase chain reaction (PCR) analysis.
RESULTS: 22/201 infants (10.9%,16 girls : 6 boys) with clinically diagnosed conjunctivitis tested positive for C. trachomatis by conjunctival swab. Co-infection with another bacterial pathogen was present in 2/22(9.1%). Isolated ocular symptoms occurred in 20/22 (90.9%), while 2/22(9.1%) also showed systemic symptoms. Conjunctivitis began within the first 7 days of life in 13/22(59.1%) and between days 8-14 of age in 9/22(40.9%).

Bilateral conjunctivitis was observed in 12/22(54.6%); 5/12 initially showed unilateral symptoms. Conjunctival injection and purulent discharge were observed in 22/22(100%). Hemorrhagic discharge was noted in 13/22(59.1%), eyelid swelling occurred in 21/22(95.5%). Less common were chemosis in 3/22(13.6%) and papillary-follicular reaction in 3/22(13.6%), conjunctival membranes/pseudomembranes in 4/22(18.2%). All 22 infants received systemic azithromycin (20 mg/kg/day for 3 days) and topical azithromycin (2x/day for 3 days). Empirical topical antibiotics had been administered in 15/22(68.2%) before final diagnosis, but none of the selected antibiotics were effective against C. trachomatis. Clinical suspicion of preseptal cellulitis led to 1/22 being treated with a systemic antibiotic before smear results were available. Five mothers of the affected infants reported symptoms suggestive of chlamydial infection during pregnancy, and one had a history of pelvic inflammatory disease.

CONCLUSION: C. trachomatis is an important infectious cause of neonatal conjunctivitis in Slovenia, where routine screening for C. trachomatis in pregnancy is not performed, and effective topical prophylaxis for neonates is unavailable. Ocular manifestations of C. trachomatis infection are non-specific and overlap with signs of other pathogens undermining early clinical identification and appropriate antibiotic treatment. No recurrent infections were documented in our cohort, likely reflecting the efficacy of treatment protocols.

OPERACIJE SIVE MRENE PRI OTROCIH NA OČESNI KLINIKI UKC LJUBLJANA V OBDOBJU 10 LET

PEDIATRIC CATARACT SURGERY AT THE EYE HOSPITAL UMC LJUBLJANA DURING THE LAST 10 YEARS

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NAMEN: Predstaviti značilnosti kohorte otrok, ki so imeli v 10 letnem obdobju opravljeno operacijo sive mrene na Očesni kliniki v Ljubljani. Prikazana bo razlika v zgodnji obravnavi otrok s prirojeno sivo mreno med obdobjem 2015-2019, ko so slovenske porodnišnice večinoma še vpeljevale presejalno presvetljevanje optičnih medijev novorojenčkov in obdobjem 2020-2024, ko se je presvetljevanje redno izvajalo.
METODE: Retrospektivna analiza podatkov otrok starih med 0-15 let, ki so bili med 1.1.2015 in 31.12.2024 operirani zaradi sive mrene. Glede na čas operacije, smo otroke operirane zaradi prirojene ali juvenilne sive razdelili v 5 starostnih skupin: 1. starostna skupina (SS): do starosti 3 mesecev, 2. SS: 3-6 mesecev, 3. SS: 6-12 mesecev, 4. SS: 12-36 mesecev, 5. SS: 3-15 let.
REZULTATI: V obdobju 10 let je bilo operiranih 253 otrok (356 operacij), 136 dečkov in 117 deklic. Povprečna starost vseh vključenih otrok ob operaciji je znašala 51.0±50,6 mes. V 223 primerih je bila siva mrena prirojena, v 73 juvenilna in v 60 primerih pridobljena. Znotrajočesna leča (IOL) je bila primarno vstavljena pri 278 posegih (78,1%). V 1.SS je bilo opravljenih 51 posegov pri 38 otrocih, povprečne starosti 1.6±0.6 mes, IOL je bila primarno vstavljena v 33%. V 2.SS je bilo opravljenih 43 posegov pri 31 otrocih, povprečne starosti 3.5±0.67 mes, IOL je bila primarno vstavljena v 42%. V 3.SS je bilo opravljenih 34 posegov pri 28 otrocih, povprečne starosti 7.6±1.6 mes, IOL je bila primarno vstavljena v 62%. V 4.SS je bilo opravljenih 46 posegov pri 36 otrocih povprečne starosti 21.6±7.2 mes, IOL je bila primarno vstavljena v 100%. V 5.SS je bilo opravljenih 122 posegov pri 92 otrocih povprečne starosti 87.9±38.5 mes, IOL je bila primarno vstavljena v 100%. V obdobju 2015-2019 je bilo operiranih 40 dojenčkov, v obdobju 2020-2024 pa 51.
ZAKLJUČEK: Pregled podatkov 10-letne kohorte otrok, ki so bili zdravljeni na Očesni kliniki zaradi sive mrene je pokazal, da je primarna vstavitev IOL prisotna v višjem deležu sorazmerno z višjo starostno skupino. Število zgodnjih operacij sive mrene se je po uvedbi presejalnega presvetljevanja optičnih medijev vsem novorojenčkom zvišalo za 20%.

OBJECTIVE: To present the features of a cohort of children who underwent cataract surgery at the Eye Hospital, UMC Ljubljana over a 10-year period. The difference in the early management of children with congenital cataracts between the period 2015-2019, when Slovenian maternity hospitals were mostly still implementing optical media screening for newborns, and the period 2020-2024, when screening was regularly performed, will be shown.
METHODS: A retrospective analysis of data from children aged 0-15 years who underwent cataract surgery between January 1st, 2015, and December 31st, 2024. Based on the timing of the surgery, the children operated on due to congenital or juvenile cataracts were divided into 5 age groups: 1. age group (AG): up to 3 months, 2. AG: 3-6 months, 3. AG: 6-12 months, 4. AG: 12-36 months, 5. AG: 3-15 years.
RESULTS: Over the 10-year period, 253 children (356 surgeries) were operated on, 136 boys and 117 girls. The average age of the entire cohort at the time of surgery was 51.0±50.6mo. In 223 cases, the cataracts were congenital, in 73 juvenile, and in 60 acquired. An intraocular lens (IOL) was primarily implanted in 278 procedures (78.1%). In AG1, 51 procedures were performed in 38 children, with an average age of 1.6±0.6mo; IOL was primarily implanted in 33%. In AG2, 43 procedures were performed in 31 children, with an average age

of 3.5±0.67mo; IOL was primarily implanted in 42%. In AG3, 34 procedures were performed in 28 children, with an average age of 7.6±1.6mo; IOL was primarily implanted in 62%. In AG4, 46 procedures were performed in 36 children with an average age of 21.6±7.2mo; IOL was primarily implanted in 100%. In AG5, 122 procedures were performed in 92 children with an average age of 87.9±38.5mo; IOL was primarily implanted in 100%. Between 2015-2019, 40 infants in AG1-AG3 were operated on, while between 2020-2024, 51 were operated on.
CONCLUSION: A review of the 10-year cohort of children treated for cataracts at the Eye Hospital, UMC Ljubljana showed that primary IOL implantation was more prevalent in the older age groups. The number of early cataract surgeries increased by 20?ter the introduction of National screening protocol for optical media transparency in all newborns.

ZDRAVLJENJE OBSEŽNE PLOŠČATOCELIČNE NEOPLAZIJE OČESNE POVRŠINE: KLINIČNI PRIMER UČINKOVITOSTI SUBKONJUNKTIVALNIH INJEKCIJ PEGILIRANEGA INTERFERONA-ALFA-2A

TREATMENT OF EXTENSIVE OCULAR SURFACE SQUAMOUS NEOPLASIA: A CASE REPORT ON THE EFFICACY OF SUBCONJUNCTIVAL PEGYLATED INTERFERON-ALPHA-2A INJECTIONS

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NAMEN: Predstaviti izid zdravljenja ploščatocelične neoplazije očesne površine (OSSN iz angl. Ocular surface squamous neoplasia) s kirurško ekscizijo in zamrzovanjem ter adjuvantno s subkonjunktivalnimi/perilezijskimi injekcijami pegiliranega interferona-alfa-2a (PEG IFNα-2a).
METODE: Prikaz primera.
REZULTATI: 55-letni bolnik se je 5 let zdravil zaradi vnetja očesne površine s keratopatijo. Sprva je bil zdravljen zaradi keratitisa, nato pa zaradi keratopatije ob suspektnem pomanjkanju limbalnih epitelnih matičnih celic. Bris roženice je bil negativen na bakterije, glive, HSV in VZV. Že dve leti pred kirurškim posegom je pričel opažati poslabšanje vidne ostrine, ki je padla na 0,1 po Snellenu. Ob prezentaciji v okuloplastični ambulanti smo zaradi suma na ploščatocelično neoplazijo očesne površine opravili kirurško odstranitev lezije s suho tehniko in tehniko brez dotikanja tumorja, alkoholno delaminacijo roženičnega epitelija in intraoperativno zamrzovanje baze in robov tumorja. Histopatološka preiskava je pokazala ploščatocelični karcinom in situ s pozitivnimi kirurškimi robovi. Posledično je bolnik prejel adjuvantno terapijo - 4 tedenske subkonjunktivalne/perilezijske injekcije pegiliranega interferona α-2a. Po dveh injekcijah so se ostale suspektne spremembe pričele manjšati in dva tedna po zaključku zdravljenja izginile. Tri mesece po operaciji je bila vidna ostrina 1,0 po Snellenu. Zaradi suspektnih sprememb na polmesečevi gubi smo leto in pol kasneje ponovno napravili ekscizijo, vendar histopalotoške preiskave niso pokazale recidiva. Dve leti po posegu pri bolniku ne beležimo ponovitve bolezni.
ZAKLJUČEK: Kirurški izrez s suho tehniko, tehniko brez dotikanja tumorja in zamrzovanjem robov veznice in baze tumorja velja za zlati standard zdravljenja OSSN. Terapijo z zdravili, kar vključuje lokalne kemoterapevtike in imunomodulatorna zdravila, pa se redkeje uporablja za primarno zdravljenje, pogosteje pa kot adjuvantno zdravljenje. V prikazanem kliničnem primeru ploščatoceličnega karcinoma in situ s pozitivnimi kirurškimi robovi se je uporaba subkonjunktivalnih/perilezijskih injekcij PEG IFNα-2a izkazala za uspešno adjuvantno zdravljenje.

PURPOSE: The purpose of this case report is to present the clinical outcome of ocular surface squamous neoplasia (OSSN) treated with surgical resection, cryotherapy, and adjuvant therapy using subconjunctival/perilesional injections of pegylated interferon-alpha-2a (IFNα-2a).
METHODS: Case presentation.
RESULTS: A 55-year-old male patient was treated for an ocular surface disorder with keratopathy for 5 years. Initially, he was treated for keratitis and later for keratopathy and suspected limbal stem cell deficiency. A corneal swab was negative for bacteria, fungi, HSV, and VZV. Two years before surgical procedure, he began to notice a deterioration in his visual acuity, which was 0.1 on the Snellen chart. Upon presentation to the oculoplastic clinic, due to suspicion of OSSN, surgical removal of the lesion was performed using a “no touch, dry technique,”

alcohol delamination of corneal epithelium, followed by intraoperative freezing of the base and edges of the tumor. Histopathological examination revealed squamous cell carcinoma in situ with positive surgical margins. Consequently, the patient received adjuvant therapy consisting of four weekly subconjunctival/perilesional injections of pegylated Interferon α-2a. After two injections, residual suspicious lesions began to disappear, and two weeks after completing the treatment vanished completely. Moreover, three months postoperatively, the visual acuity was 1.0 on the Snellen chart. One and a half years later, additional suspicious papillomatous changes were noted on the plica semilunaris and another excision was performed. However, the histopathological findings were benign. Two years after the initial surgery, there is no recurrence of the disease.

CONCLUSION: Surgical excision using a “no touch, dry technique,” followed by intraoperative freezing of the base and edges of the tumor, is the gold standard for the management of OSSN. Medical therapy, including topical chemotherapeutic agents, can be used as monotherapy or more commonly as adjuvant treatment. In our case of squamous cell carcinoma in situ with positive surgical margins, the use of subconjunctival/perilesional injections of IFNα-2a has proven successful as an adjuvant treatment.

GENOTIPSKA IN FENOTIPSKA ANALIZA PRI SLOVENSKIH BOLNIKIH S STROMALNIMI DISTROFIJAMI ROŽENICE

GENOTYPIC AND PHENOTYPIC ANALYSIS IN SLOVENIAN PATIENTS WITH CORNEAL STROMAL DYSTROPHIES

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NAMEN: Genetska in klinična slika pri bolnikih s stromalnimi distrofijami in potrjenimi patogenimi mutacijami.
METODE: sistematični pregled, retrospektivna raziskava, Očesna klinika UKC Ljubljana in Klinični inštitut za genetiko UKC Ljubljana.
REZULTATI: Iz Ambulante za refraktivno kirurgijo in bolezni roženice na Očesni kliniki UKC Ljubljana, kjer se vodijo pacienti zaradi težjih oblik stromalnih distrofij pred in po transplantaciji, je bilo v letih od 2015 do 2025 testiranih 7 pacientov s stromalno distrofijo. Genetsko testiranje z metodo sekvenciranja naslednje generacije in pregledom 21 genov v panelu za distrofijo roženice (https://nhsgmspanelapp.genomicsengland.co.uk/panels/658/v3.2) je v 5 primerih pokazalo vzročno patogeno različico gena, v 2 pa je bila le-ta verjetna. Patogene različice so bile ugotovljene v genu TGFBI, verjetno patogene pa v genih CHST6 in GSN. Prikazujemo klinične slike in družinske podatke pacientov z gentsko potrjenimi stromalnimi distrofijami roženice.
ZAKLJUČKI: Neprestani napredki na področju genske terapije, regenerativne terapije in terapije z augmentacijo celic lahko v prihodnosti privedejo do razvoja alternativnih in inovativnih zdravljenj roženičnih distrofij, kar bi lahko bistveno izboljšalo kakovost življenja pacientov s temi stanji in zmanjšalo potrebo po trasnplantacijah.

PURPOSE: To assess the genetic profiles and clinical pictures of patients with stromal dystrophies and confirmed pathogenic mutations.
METHODS: A systematic review and retrospective study were conducted at the Eye Clinic and the Clinical Institute of Genomic Medicine, University Medical Centre Ljubljana.
RESULTS: Genetic analysis was indicated at the Cornea outpatient clinic, where severe cases of stromal corneal dystrophies are being followed-up before and after corneal transplantation. 7 patients with corneal stromal dystrophy underwent genetic analysis between 2015 and 2025 using the PanelAP (21-gene panel, https://nhsgms-panelapp.genomicsengland.co.uk/panels/658/v3.2) for corneal dystrophies. Genetic testing using next-generation sequencing revealed a causative pathogenic variant in 5 cases, while 2 cases were classified as having probable pathogenic variants. Pathogenic variants were identified in the TGFBI gene, whereas probable pathogenic variants were detected in the CHST6 and GSN genes. Clinical images and familial data of patients with genetically confirmed stromal dystrophies are presented.
CONCLUSIONS: Ongoing advances in gene therapy, regenerative therapy and cell augmentation therapy may eventually result in the development of alternative, novel treatments for corneal dystrophies, which may substantially improve the quality of life of patients with these conditions and reduce the need for transplants.

ZDRAVLJENJE DIALIZE CILIARNIKA PO POŠKODBI Z AIRSOFT PUŠKO – INOVATIVNA UPORABA DOUBLE-FLANGE TEHNIKE PRI HIPOTONIJI OČESA

CYCLODIALYSIS TREATMENT AFTER AIRSOFT GUN INJURY – INNOVATIVE USE OF DOUBLE-FLANGE TECHNIQUE IN EYE HYPOTONY

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UVOD IN OZADJE: Dializa ciliarnika je redka vendar lahko zelo resna posledica tope poškodbe očesa, kakršna se zgodi tudi pri športnih in rekreacijskih aktivnostih (npr. airsoft). Nastali premik ciliarnega telesa od sklere povzroča vztrajno hipotonijo, ki lahko vodi v hipotonično makulopatijo in trajno poslabšanje vida. Kadar standardni postopki, kot je zdravljenje s cikloplegiki in npr. transskleralna kriokoagulacija, odpovejo, je potrebna kirurška rekonstrukcija – ciklopeksija.
OPIS PRIMERA: Predstavljamo primer 31-letnega bolnika, ki se je poškodoval z airsoft puško in utrpel dializo ciliarnika. Po topikalnem zdravljenju s cikloplegikom in protivnetno terapijo nismo dosegli želenega izboljšanja. Hipotonijo smo prvič beležili 12 dni po poškodbi, hipotonično makulopatijo s poslabšanjem vidne ostrine pa 2 meseca po poškodbi. Kljub transskleralni kriokoagulaciji se ciliarnik ni nalegel. Odločili smo se za inovativen pristop: 1. Identifikacija mesta dialize s pomočjo gonioskopije, oftalmoskopije in ultrazvočnega pregleda (UBM). 2. Uporaba Prolene 6-0 šiva s termokavterizirano prirobnico (“double-flange” tehnika), s katero smo ciliarnik prišili nazaj na sklero. 3. Argon laserska trabekuloplastika z namenom povzročanja brazgotinjenja na prizadetem delu zakotja.
REZULTATI: Po uspešni rekonstrukciji smo po 2 tednih beležili normalen intraokularni tlak, postopno se je izboljševala tudi hipotonična makulopatija. Na podlagi OCT preiskav je CRT v 3 tednih upadel iz 357 na 271 mikronov, po 7 tednih smo beležili le še blažje gube mrežnice, slika UZ zrkla se je normalizirala. Vidna ostrina se je popravila iz 0,63 na 1,0 z ustrezno korekcijo. Pacient, ki je bil prej odvisen od pogostih kontrol zaradi nestabilnosti očesnega pritiska, je zdaj v rednem letnem spremljanju brez potrebe po dodatnih kirurških posegih.
ZAKLJUČEK: Ta primer kaže, da je neposredno šivanje dializiranega ciliarnega telesa na sklero z double-flange tehniko lahko učinkovito in varno tudi pri fakih pacientih. Predstavlja možnost za ohranitev funkcije očesa in preprečevanje trajne okvare vida pri hipotoniji, ki bi sicer vodila v makulopatijo, metamorfopsijo in nepovratne spremembe. Inovativna uporaba prolenskih šivov pri takšnih rekonstruktivnih posegih kaže, da se koncept prirobnice (flange) lahko uspešno preslika tudi iz fiksacije IOL v reševanje drugih, redkejših očesnih patologij.

INTRODUCTION AND BACKGROUND: Cyclodialysis is a rare but serious consequence of blunt force trauma to the eye, which can often occur during sports or other recreational activities (such as airsoft). The cleft between the ciliary body and sclera causes persistent hypotony, which can lead to hypotonic maculopathy and permanent vision impairment. When classic interventions, like treatment with cycloplegics and transscleral cryocoagulation, are ineffective, surgical reconstruction is necessary – cyclopexy.
CASE DESCRIPTION: A 31-year-old patient suffered cyclodialysis due to an airsoft gun injury. Topical therapy with cycloplegics and anti-inflammatory agents was ineffective. Hypotony was first recorded 12 days after the injury, and hypotonic maculopathy with a reduction in visual acuity was observed 2 months after the injury. The ciliary body remained detached even after therapy with transscleral cryocoagulation. We decided on an innovative approach: 1. Identification of the site of cyclodialysis with gonioscopy, ophthalmoscopy and ultrasound imaging

(UBM). 2. Use of a Prolene 6-0 suture with thermal cauterization of a flange (“double-flange” technique) to suture the ciliary body back to the sclera. 3. Argon laser trabeculoplasty to create scarring at the site of the injury.
RESULTS: Two weeks after the successful reconstruction, intraocular pressure normalized, and hypotonic maculopathy gradually improved. Based on OCT imaging, CRT decreased from 357 to 271 microns. After 7 weeks, only slight macular chorioretinal folds were observed, ultrasound showed normal anatomy. Visual acuity improved from 0.63 to 1.0 with proper refractive correction. The patient, who had previously depended on frequent examinations due to unstable intraocular pressure, is now in regular yearly follow-ups without the need for further surgical interventions.
CONCLUSION: This case demonstrates that direct suturing of the dialyzed ciliary body to the sclera using the double-flange technique can be useful and safe, even in phakic patients. It presents the possibility of preserving eye function and preventing permanent vision loss in hypotony, which would otherwise lead to maculopathy, metamorphopsia, and irreversible changes. The innovative use of Prolene sutures in such reconstructive surgery proves that the flange technique can also be successfully applied in complex and rare pathologies, not only in IOL fixation.

VERIŽNA POT: OD LEDVIC DO OČI

A CHAIN JOURNEY: FROM KIDNEY TO EYE

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Prikaz kliničnega primera 57-letne Kubanke z dolgoletno zgodovino neurejene arterijske hipertenzije, hiperlipidemije, blage diastolične disfunkcije levega prekata in napredovale kronične bolezni ledvic, z zmanjšano vidno ostrino obojestransko s korekcijo 0,7 (po Snellenu). Sprednja biomikroskopija ni prikazala sprememb sprednjega segmenta. Zadnja biomikroskopija je pokazala obojestranski serozni odstop makul z rumeno-sivimi subretinalnimi depoziti obdanimi s hipopigmentiranimi areali, na avtofluorescenci vidnimi kot vzorec geparda. OCT makul je pokazal hiperreflektivne grčaste depozite vzdolž kompleksa RPE-Bruchove membrane in subfovealni serozni odstop. Na FA, ICG in OCTA ni bilo vidnih žilnih nepravilnosti. Elektrofiziološko testiranje je bilo v mejah normale. Pregled vidnega polja je pokazal centralni skotom obojestransko. Ultrazvok zrkel in orbit je bil v mejah normale. Laboratorijski serumske preiskave so pokazale slabo delovanje ledvic, blago anemijo in trombocitopenijo. V urinskem sedimentu je bila prisotna proteinurija. Opravljeni so bili imunološki testi (ANA, anti-ENA, ANCA), ki so bili negativni. Prisotna so bila IgG protitelesa za Toxoplasma gondii, Toxocara sp., HVS1 in HSV2. Kvantiferonski test je bil negativen. Elektroforeza beljakovin v serumu in urinu je pokazala povišane proste lahke verige imunoglobulinov κ. Biopsija kostnega mozga je pokazala 10% infiltracijo s plazmatkami z restrikcijo na κ verige. Biopsija ledvic je bila negativna na amiloid, vendar je pokazala bolezen odlaganje lahkih verig (LCDD) z napredovalo ledvično okvaro. Hematološko-nefrološki konziliji je podal mnenje, da je prišlo do napredovanja v diseminirani plazmocitom z napredovalo ledvično okvaro. Indicirano je bilo hematološko zdravljenje, uvedeno je bilo zdravljenje po shemi DARA-VCD, ki vključuje daratumumab, bortezomib, lenalidomid in deksametazon. Po treh tedenskih aplikacijah smo opazili morfološko očesno izboljšanje z začetno regresijo seroznega makularnega odstopa, s stabilno ostrino vida obojestransko s korekcijo 0,7 (po Snellenu) in stabilno ledvično funkcijo. Predvideno je nadaljevanje zdravljenja. LCDD je redka oblika monoklonske gamopatije. Očesna simptomatika bolnice je sovpadala z ledvično prizadetostjo. Glede na razpoložljivo literaturo je to eden izmed redkih, prvi v Sloveniji, doslej opisanih primerov histopatološko potrjene bolezni odlaganja lahkih verig κ okoli glomerulov, povezanega z obojestranskim odlaganjem lahkih verig na pigmentni epitel.

A case report of a 57-year-old Cuban woman with a longstanding history of uncontrolled arterial hypertension, hyperlipidemia, mild left ventricular diastolic dysfunction and advanced chronic renal failure who presented with mildly decreased visual acuity on both eyes with correction 0,7 (Snellen chart). Slit-lamp biomicroscopy showed quiet anterior segments. Dilated fundus examination revealed bilateral macular serous detachment with generalized yellow gray subretinal deposits with hypopigmented areals, visible on fundus autofluorescence as a “leopard spot-like” pattern. Spectral domain OCT showed striking globular subretinal deposits along the RPE–Bruch’s membrane complex and subfoveal subretinal fluid. No vascular abnormalities were observed on FA, ICG, and OCT angiography. Electrophysiological testing was within normal limits. Visual field examination showed a central scotoma bilaterally . Eye and orbit ultrasound was within normal limits. Serum laboratory tests showed poor renal function, mild anaemia and thrombocytopenia. Proteinuria was present in the urinary sediment. Immunological tests (ANA, anti-ENA, ANCA) were performed and were negative. IgG antibodies to Toxoplasma gondii, Toxocara sp., HVS1 and HSV2 were detected. Quantiferon test was negative. Serum and urine protein electrophoresis showed significant free monoclonal immunoglobulin κ light chains (LCs). Bone marrow biopsy showed 10% plasma cell infiltration with restriction to κ chains. The kidney biopsy was negative for amyloid, but showed LC deposition disease (LCDD), with advanced chronic lesions already present. The haemato-nephrological specialists suggested an initial progression to disseminated plasmacytoma with advanced renal impairment. Hematological treatment was indicated, treatment was introduced with DARA-VCD scheme, including

Daratumumab, Bortezomib, Lenalidomide and Dexamethasone. After 3 weekly applications, we observed a morphological ocular improvement with initial regression of serous macular detachment with stable visual acuity on both eyes with correction 0,7 (Snellen chart) and stable renal function. Continuation of treatment is planned. LCDD is a rare form of monoclonal gammopathy. The patient's ocular course mirrored the severity of her renal dysfunction. Based on the available literature, this is one of few cases, first one in Slovenia, described before of histopathological confirmed deposition of kappa LCs around the glomeruli, associated with bilateral pigment epithelial immunoglobulin LC deposition.

KO SVETLOBA PREMAGA TEMO

OUT OF THE DARK, INTO THE LIGHT

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Namen prispevka je prikaz primera 26-letnega bolnika z reverzibilno levostransko homonimno hemaniopsijo ob nezgodi z električnim udarom visoke napetosti, kateri je sledila skupno vsaj 90-minutna reanimacija. Z oftalmološkim pregledom smo posumili na levostransko homonimno hemianopsijo, ki smo jo kasneje objektivizirali s statično perimetrijo, kjer so bili vidni gosti izpadi z delno ohranjenim delom makularnega vidnega polja. MR glave je prikazala obsežne postishemične spremembe v desnem parietokcipitalnem korteksu. Na kontrolni statični perimetriji po 6 mesecih je prišlo do bistvene regresije skotomov. Ob zadnji kontroli po 2 letih od dogodka, ni bilo več videti izpadov na vidnem polju. Vidna ostrina je bila ves čas spremljanja pacienta primerna. Z OCT nismo prikazali znakov retrogradne transsinaptične degeneracije. Na kontrolni MR preiskavi glave so bile vidne starejše postishemične spremembe v desnem parietookcipitalnem korteksu ter obojestranskem temporalnem korteksu. Bolnik je zaradi stanja po srčnem zastoju, kognitivnega upada in motene dorzifleksije levega stopala opravil obsežno rehabilitacijo v URI Soča, kjer se mu je splošno stanje bistveno izboljšalo. Oftalmologi se pri vsakodnevnem delu pogosto srečujemo z bolniki po ishemični možganski kapi v predelu okcipitalnega korteksa, s posledično ireverzibilno homonimno hemianopsijo in ohranjenim centralnim delom vidnega polja. V opisanem primeru je zanimivo dejstvo, da je kljub obsežnim ishemičnim spremembam na MR glave pri bolniku, ki je utrpel električni udar visoke napetosti in dolgotrajen srčni zastoj, prišlo do popolne regresije izpadov vidnega polja.

The case report presents an example of a 26-year-old patient with reversible left homonymous hemianopsia following a high-voltage electric shock accident, which was followed by at least 90 minutes of resuscitation. Ophthalmological examination raised suspicion of left homonymous hemianopsia, which was later confirmed using static perimetry, revealing dense visual field defects with partial preservation of the macular area. Brain MRI showed extensive post-ischemic changes in the right parieto-occipital cortex. Follow-up static perimetry after 6 months revealed significant regression of the scotomas. At the final control, two years after the incident, no visual field defects were present, and the visual acuity remained stable throughout the patient's follow-up. OCT did not show signs of retrograde transsynaptic degeneration. A follow-up MRI showed older post-ischemic changes in the right parieto-occipital cortex and bilateral temporal cortex. The patient underwent extensive rehabilitation at URI Soča due to the aftermath of cardiac arrest, cognitive decline, and impaired dorsiflexion of the left foot, with significant improvement in his overall condition. Ophthalmologists frequently encounter patients after ischemic strokes affecting the occipital cortex, resulting in irreversible homonymous hemianopsia with preserved central visual field. The interesting aspect of this case is that, despite extensive ischemic changes seen on the brain MRI in a patient who suffered a high-voltage electric shock and prolonged cardiac arrest, the visual field defects completely regressed.

NEPOVABLJEN GOST V ORBITI

AN UNINVITED GUEST IN THE ORBIT

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Namen prispevka je prikaz 80-letnega bolnika z anamnezo 3 mesece trajajočega glavobola v predelu leve strani čela ter 14-dni trajajočih dvojnih slik in hudega poslabšanja vida na levo oko. Z oftalmološkim pregledom smo odkrili levostransko moteno senzibiliteto dermatoma V1, levostransko parezo III, IV. in VI. možganskega živca ter edem papile levega vidnega živca z izrazitimi izpadi vidnega polja. Slikovna diagnostika glave je prikazala maso v predelu levega etmoidalnega sinusa, orbitalnega apeksa in zgornje orbitalne fisure. S strani ORL je bila opravljena kirurška odstranitev spremembe ter dekompresija levega optičnega kanala. Patohistološki pregled odvzetih vzorcev je prikazal invazivno glivično vnetje. Mikrobiološke preiskave so identificirale Aspergillus fumigatus. S strani infektologa je bila sprva uvedena terapija z amfotericinom B, ob identifikaciji glive, pa je sledilo 3 mesečno zdravljenje z vorikonazolom in kasneje 4 mesečna terapija z itrakonazolom. Kontrolna MR glave je prikazala regresijo sprememb. Senzibiliteta in bulbomotorika se je v celoti povrnila, vidna funkcija pa je na račun atrofije vidnega živca bila izgubljena. Pri bolniku smo lahko videli znake sindroma orbitalnega apeksa s popolno izgubo vidne funkcije ter sindrom zgornje orbitalne fisure z motnjami bulbomotorike in senzibilitete, ki so bile reverzibilne. Invazivna aspergiloza je zelo redko stanje, ki je najpogosteje omejeno na pljuča in paranazalne sinuse, kadar pa gre za invazivno obliko, predvsem pri imunokomprimitiranih pa je možen progres v orbito in intrakranialno. Hitra diagnoza in zdravljenje sta ključna za preprečevanje resnih zapletov, vključno z okvarami vida in potencialno smrtjo. Multidisciplinarni pristop, ki vključuje oftalmologe, otorinolaringologe/nevrokirurge in infektologe, je bistven za učinkovito obvladovanje teh kompleksnih stanj.

The purpose of this article is to present an 80-year-old patient with a history of a 3-month-long headache in the left forehead region, as well as 14 days of double vision and severe deterioration of vision in the left eye. Ophthalmologic examination revealed left-sided sensory loss in the V1 dermatome, left-sided paresis of cranial nerves III, IV, and VI, and swelling of the left optic nerve head with significant visual field defects. Imaging of the head showed a mass in the left ethmoidal sinus, orbital apex, and superior orbital fissure. An ENT surgical intervention was performed to remove the mass and decompress the left optic canal. Histopathological examination of the samples revealed invasive fungal inflammation. Microbiological tests identified Aspergillus fumigatus. Infectious disease specialists initially initiated treatment with amphotericin B, followed by a 3-month course of voriconazole and a subsequent 4-month course of itraconazole after the fungal infection was identified. A follow-up brain MRI showed regression of the changes. Sensitivity and bulbomotor function fully recovered, while vision was lost due to optic nerve atrophy. In the patient, we could observe signs of orbital apex syndrome with complete loss of visual function and superior orbital fissure syndrome with disturbances in bulbomotor function and sensation, which were reversible. Invasive aspergillosis is a very rare condition, most commonly limited to the lungs and paranasal sinuses. However, in its invasive form, especially in immunocompromised individuals, progression into the orbit and intracranially is possible. Rapid diagnosis and treatment are crucial to prevent serious complications, including vision loss and potential death. A multidisciplinary approach involving ophthalmologists, ENT/neurosurgeons, and infectious disease specialists is essential for the effective management of these complex conditions.

ANATOMSKI IN FUNKCIONALNI IZIDI PARS PLANA VITREKTOMIJE PRI ZDRAVLJENJU LAMELARNE MAKULARNE LUKNJE: PRIMERJALNA SERIJA PRIMEROV

ANATOMICAL AND FUNCTIONAL OUTCOMES OF PARS PLANA VITRECTOMY FOR LAMELLAR MACULAR HOLE: A COMPARATIVE CASE SERIES

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NAMEN: Oceniti anatomske in funkcionalne rezultate pars plana vitrektomije (PPV) pri zdravljenju pacientov z lamelarno makularno luknjo (LMH) in jih primerjati z rezultati kontrolne skupine neoperiranih pacientov. Študija se osredotoča na spremembe v najboljši korigirani vidni ostrini (BCVA), stabilnosti in občutljivosti mikroperimetrije ter parametrih makularne optične koherenčne tomografije (OCT) za oceno koristi kirurških posegov.
METODE: Vključenih je bilo enajst bolnikov (12 oči) z LMH brez drugih očesnih bolezni ali predhodnega vitreoretinalnega posega. Pacienti so bili psevdofaki ali pa so imeli prozorno lastno lečo. Pri vseh so bile ob začetku in spremljanju ocenjeni BCVA (po Snellenu), parametri mikroperimetrije (stabilnost fiksacije, povprečna makularna občutljivost na 4°) in OCT, kot so centralna makularna debelina (CMT) ter prekinitev elipsoidne cone (EZ). Pacienti so bili spremljani med 4 in 18 meseci. Pri pacientih v kirurški skupini (3 psevdofakični bolniki, 3 oči) je bila narejena PPV z modificiranim luščenjem epiretinalne proliferacije ter MLI in tamponada s plinom SF6 ali zrakom. Pacienti v kontrolni skupini (8 bolnikov, 9 oči; 6 psevdofakične, 3 fakične) so bili obravnavani konzervativno brez kirurškega posega.
REZULTATI: V kirurški skupini se je BCVA pooperativno izboljšala pri vseh bolnikih (iz 0,5 na 0,9; 0,4 na 0,8; 0,5 na 1,0). CMT se je zmanjšala iz 314 µm, 344 µm in 454 µm pred operacijo na 274 µm, 294 µm in 354 µm. Pri dveh bolnikih se je makularna občutljivost izboljšala (20,4 na 24,6 dB; 16,4 na 25,0 dB), pri enem pa je prišlo do manjšega poslabšanja (29,2 na 26,8 dB). Dva pacienta sta imela pred operacijo prekinitev EZ; pri enem je ostala nespremenjena, medtem ko se je pri drugem EZ ponovno vzpostavila. Kontrolna skupina je imela boljšo začetno BCVA (povprečno 0,79 Snellen), ki je ostala stabilna. CMT se je le minimalno spremenila. Pri treh primerih je ob začetku spremljanja zabeležena prekinitev EZ ostala nespremenjena. Stabilnost fiksacije je bila pri večini ohranjena, pri dveh bolnikih pa se je rahlo poslabšala. Povprečna makularna občutljivost je ostala stabilna.
ZAKLJUČEK: Pri pacientih z LMH smo s PPV in modificiranim luščenjem membran izboljšali tako anotomsko kot funkcionalno stanje. Kirurški poseg je izboljšal vidno ostrino, zmanjšal centralno makularno debelino (CMT) ter ohranil ali izboljšal občutljivost mikoperimetrije. V kontrolni skupini so rezultati ostali stabilni skozi celotno obdobje spremljanja. Ti izsledki kažejo, da bi PPV lahko koristila bolnikom z LMH, medtem ko je v nekaterih primerih lahko ustrezno tudi spremljanje pacienta. Za natančnejšo določitev indikacij za kirurško zdravljenje in optimizacijo terapevtskih pristopov so potrebne nadaljnje obsežnejše študije.

PURPOSE: To evaluate the anatomical and functional outcomes of pars plana vitrectomy (PPV) for patients with lamellar macular hole (LMH) and compare them to a control group of non-operated patients. The study focused on BCVA, microperimetry stability and sensitivity and macular OCT findings to determine surgical benefits.
METHODS: Eleven patients (12 eyes) with LMH were included, all without other ocular diseases or prior vitrectomy, and were either pseudophakic or had a clear crystalline lens. BCVA (Snellen), microperimetry (fixation stability, mean macular sensitivity at 4°), and OCT parameters, e.g. central macular thickness (CMT), ellipsoid zone (EZ) disruption, were assessed in all patients at baseline and follow-up (4 –18 months). The surgical group (3 pseudophakic patients, three eyes) underwent PPV with modified epiretinal proliferation and ILM peeling. SF6

gas or air tamponade was used. The control group (8 patients, 9 eyes; 6 pseudophakic, 3 phakic) was managed conservatively without intervention.

RESULTS: All surgical group patients' BCVA improved postoperatively (0.5 to 0.9, 0.4 to 0.8, and 0.5 to 1.0). CMT reduced from 314 µm, 344 µm, and 454 µm preoperatively to 274 µm, 294 µm, and 354 µm, respectively. Two patients improved in mean microperimetry sensitivity (20.4 to 24.6 dB, 16.4 to 25.0 dB), while one had a minor decline (29.2 to 26.8 dB). Two patients exhibited preoperative EZ disruption; in one case, it remained unchanged, while in the other, it resolved. The control group had a better baseline BCVA (mean 0.79 Snellen), which remained stable. CMT showed minimal changes. EZ disruption was present at baseline in three cases and remained unchanged. Fixation stability remained stable in most cases, while the two worsened slightly. Mean microperimetry sensitivity at 4° remained stable.

CONCLUSION: Pars plana vitrectomy (PPV) provided anatomical and functional benefits for patients with LMH. Surgery improved visual acuity, reduced CMT, and provided stable or enhanced microperimetry sensitivity. The control group remained stable during the follow-up period. These findings suggest that PPV could benefit patients with LMH, while observation may be appropriate for some cases. Further large-scale studies are needed to refine surgical indications and optimize treatment strategies for LMH.

RAZISKOVANJE VLOGE RPGR IZOFORM V PALIČNICAH IN ČEPNICAH HUMANIH MREŽNIČNIH ORGANOIDOV

TOWARDS EXPLORING THE ROLE OF RPGR ISOFORMS IN RODS AND CONES IN HUMAN RETINAL ORGANOIDS

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NAMEN: Retinitis Pigmentosa GTPazni regulator (RPGR) je beljakovina, ki igra ključno vlogo v izgradnji povezovalnih cilij in zunanjih segmentov fotoreceptorskih celic. Znano je, da patogene različice v RPGR lahko prizadenejo bodisi paličnice ali čepnice, vendar mehanizem za tem ni poznan (1). Raziskave na bolnikovih fibroblastih so pokazale, da razmerje mrežnično specifičnih RPGR izoform vpliva na dolžino povezovalnih cilij. Zaradi težavnosti in tveganja pridobitve vitalnega mrežničnega tkiva bolnikov, zaenkrat ni jasno ali lahko razmerje RPGR izoform vpliva na dolžino povezovalnih cilij paličnic ali čepnic.
METODE: Za raziskovanje povezave med razmerjem RPGR izoform ter dolžino povezovalnih cilij v paličnicah in čepnicah, smo vzgojili humane mrežnične organoide kot model z RPGR povezanimi fenotipi. Za nadaljnjo analizo smo ustvarili 5 podskupin mrežničnih organoidov: 1) wild-type skupina (10 organoidov), 2) wild-type skupina z dodano scramble RNA (10 organoidov), 3) skupina z zmanjšanim izražanjem RPGR ORF15 izoforme (10 organoidov), 4) skupina z zmanjšanim izražanjem RPGR skip14/15 izoforme ter 5) skupina z zmanjšanim izražanjem vseh RPGR izoform (10 organoidov). Izražanje RPGR izoform v humanem mrežničnem organoidu smo regulirali s kratko lasnično RNA (shRNA), specifično za vsako od treh RPGR izoform. Za transport shRNA v fotoreceptorje, smo uporabili adenovirusne vektorje (AAV) ter ocenjevali uspešnost transdukcije s konfokalno mikroskopijo in segmentacijskimi orodji (2). Za analizo morfologije fotoreceptorjev smo uporabili in vivo ali imunofluorescenčno visokoresolucijsko mikroskopijo (5 organoidov iz vsake podskupine). Razmerje RNA izoform smo ocenili z uporabo RNA sekvenciranja posameznih celic (5 organoidov iz vsake skupine).
ZAKLJUČKI: Z našo raziskavo se nadejamo najti razlike v razmerju RPGR izoform med paličnicami in čepnicami ter ugotoviti njihov vpliv na morfologijo fotoreceptorjev. Naš in vitro model bi v prihodnosti lahko pomagal usmerjati razvoj potencialnih tarčnih terapij reguliranja izražanja razmerja RNA izoform, kot obetajočega zdravljenja na področju genetskih bolezni mrežnice.
1 Hadalin et al. Int J Mol Sci 2023.02.14, doi: 10.3390/ijms24043840 2 Rogler et al., bioRxiv 2024.03.06.583795.

PURPOSE: The Retinitis Pigmentosa GTPase Regulator (RPGR) protein plays a crucial role in the formation of connecting cilia and outer segments in photoreceptor cells (PRs). Although pathogenic variants in RPGR are known to impact either rod or cone PRs, the underlying mechanism behind this distinction remains unclear (1). Research involving patient-derived fibroblasts has indicated that the ratio of retina-specific RPGR isoforms influences the length of the connecting cilia. However, it remains uncertain whether these findings apply to rods and cones due to the difficulty in obtaining living human retinal tissue.
METHODS: To investigate the relationship between RPGR isoform ratios and connecting cilia length in rods and cones, we are establishing human retinal organoids (hROs) as an RPGR disease model. For further analysis we created 5 subgroups of organoids: 1) wild-type group (10 organoids), 2) wild-type group with added scramble RNA (10 organoids), 3) group with RPGR ORF15 isoform downregulation (10 organoids), 4) group with RPGR skip14/15 isoform downregulation (10 organoids) and 5) group with all RPGR isoforms' downregulation (10 organoids). We manipulate RPGR isoform expression using short hairpin RNA (shRNA) specific to each of the three RPGR isoforms. Adeno-associated viral vectors (AAVs) are employed for shRNA delivery, transduction efficiency is evaluated using

confocal microscopy and deep learning-based segmentation tools (2). For photoreceptor's morphology analysis, we utilize live or immunofluorescence high-resolution microscopy (5 organoids from each condition). For RNA isoform ratio evaluation we perform single-cell RNA sequencing (5 organoids from each condition).
CONCLUSIONS: We anticipate discovering variations in the isoform ratio between rods and cones, and documenting their impact on photoreceptors' morphology. Our in vitro model may help guiding the development of therapies targeting the modulation of RNA isoform expression ratios, offering a promising avenue for retinal precision medicine.
1 Hadalin et al. Int J Mol Sci 2023.02.14, doi: 10.3390/ijms24043840 2 Rogler et al., bioRxiv 2024.03.06.583795.

ZVEZA NA DALJAVO

LONG DISTANCE RELATIONSHIP

Tilen Kamenski, Maja Pakiž, Maja Ravnik, Tadeja Verbančič, Suzana Gradišnik, Nenad Kljaić
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Namen prispevka je prikaz primera 77-letne bolnice pri kateri je bila akutno nastala slepota prvi simptom metastatskega karcinoma jajčnika domnevno zaradi paraneoplastične retinopatije. Pri bolnici smo ugotavljali obojestranski izrazit upad vidne ostrine z zaznavanjem prstov pred očmi v centralnem delu vidu polja. Z multimodalno očesno slikovno diagnostiko smo zaznali ohranjen sloj fotoreceptorjev zgolj v centralnem delu makul, cistoidni makularni edem ter znake progresivne okluzivne vaskulopatije. S skotopično in fotopično elektroretinografijo smo zaznali generalizirano okvaro mrežnice. Z vidnimi evociranimi potenciali smo zaznali znižane amplitude in podaljšane latence prevajanja po vidni poti. V razširjenih laboratorijskih preiskavah krvi so izstopali zvišani tumorski marker CA 125, blago zvišani vnetni parametri in izrazito povišana paraneoplastična protitelesa anti-ZIC4. Z razširjeno slikovno diagnostiko ter patohistološkimi preiskavami vratne bezgavke, temporalne arterije in odstranjene maternice z adneksi smo diagnosticirali metastatski serozni karcinom levega jajčnika visoke stopnje. Ob terapiji s kortikosteroidi, mikofenolno kislino in kemoterapijo po shemi paklitaksel/karboplatin smo bolnici uspeli ohraniti dobro vidno ostrino v centralnem 10° otočku vidnega polja. Paraneoplastična retinopatija je sindrom, pri katerem avtoimuna protitelesa navzkrižno delujejo na tumorske in retinalne celice, kar vodi do retinalne degeneracije, ki se klinično najpogosteje kaže z motnjami vida. V literaturi so poročali o prisotnosti anti-ZIC4 pri adenokarcinomu jajčnika s klinično sliko paraneoplastičnega cerebelarnega sindroma. Ni podatkov o potencialni retinalni toksičnosti anti-ZIC4. Na podlagi učinkovitega odziva na imunomodulatorno terapijo sklepamo, da gre pri bolnici za paraneoplastično dogajanje.

The purpose of the report is to present a case of a 77-year old patient with acute blindness as the first presentation of metastatic ovarian carcinoma, most likely as a part of paraneoplastic retinopathy. The patient had bilateral severe visual acuity loss with finger perception in front of the eyes in the central part of the visual field. Multimodal ocular imaging revealed a preserved photoreceptor layer only in the central part of the macula, cystoid macular edema, and signs of progressive occlusive vasculopathy. Scotopic and photopic electroretinography recorded signs of generalized retinal damage. Visual evoked potentials showed reduced amplitudes and prolonged conduction latencies along the visual pathway. Extensive laboratory blood tests revealed elevated tumor marker CA 125, mildly elevated inflammatory parameters, and highly elevated paraneoplastic anti-ZIC4 antibodies. With extended imaging diagnostics and pathohistological examinations of the cervical lymph node, temporal artery and removed uterus with adnexa, we diagnosed metastatic high grade serous carcinoma of the left ovary. Therapy with corticosteroids, mycophenolic acid and chemotherapy regimen with paclitaxel/carboplatin, we managed to maintain good visual acuity in the central 10° part of the visual field. Paraneoplastic retinopathy is a syndrome in which autoimmune antibodies cross-react with tumor and retinal cells, leading to retinal degeneration, which clinically most often manifest with visual disturbances. The presence of anti-ZIC4 in ovarian adenocarcinoma with a clinical picture of paraneoplastic cerebellar syndrome has been reported in the literature. There is no data on the potential retinal toxicity of anti-ZIC4. Based on the effective immunomodulatory therapy response we concluded that the patient has a paraneoplastic disorder.

KLINIČNI PRIMER: REŽA PRED ŽILNICO PRI BOLNIKIH Z NEOVASKULARNO STAROSTNO DEGENERACIJO MAKULE

A CASE REPORT: PRECHOROIDAL CLEFT IN PATIENTS WITH NEOVASCULAR AGE-RELATED MACULAR DEGENERATION

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NAMEN: Reža pred žilnico, je morfološka sprememba, ki jo z optično koherentno tomografijio (OCT) vidimo kot hiporeflektivni tekočinski prostor med Bruchovo membrano in hiperreflektivnim večplastnim materialom v odstopu pigmentnega epitela mrežnice. Predstavili bomo bolnico z režo pred žilnico v sklopu neovaskularne oblike starostne degeneracije makule (nSDM).
METODE: Pregled literature s prikazom primera.
REZULTATI: Primer 77-letne bolnice z režo pred žilnico v sklopu aktivne makularne neovaskularizacije na desnem, funkcionalno boljšem očesu, in začetno vidno ostrino (VO) 59 črk po ETDRS lestvici. Z zdravljenjem s faricimabom po shemi zdravi in podaljšaj smo vzdrževali VO 58 črk, z OCT pa je bilo vidno postopno zmanjšanje velikosti reže pred žilnico. Na drugem očesu je bolnica imela napredovalo obliko nSDM s fibrozirano makularno neovaskularizacijo in VO 50 črk.
ZAKLJUČEK: Reža pred žilnico, ki jo prikažemo z OCT, lahko pri bolnikih z nSDM predstavlja koristen biomarker za oceno aktivnosti bolezni in potrebo po individualiziranem terapevtskem pristopu. Njen klinični pomen in patogeneza še nista povsem pojasnjena.

PURPOSE: Prechoroidal cleft is an optical coherent tomography (OCT) feature characterised by the presence of a hyporeflective fluid space between Bruch's membrane and the hyperreflective multilayered material within the pigment epithelial detachment (PED). We present a patient with prechoroidal cleft associated with neovascular age-related macular degeneration (nAMD).
METHODS: A case report and literature review.
RESULTS: A 77-year-old patient presented with a history of bilateral nAMD. The right eye had previously developed a fibrotic macular scar with visual acuity (VA) of 50 letters (using ETDRS chart). The left eye, the better-seeing eye, had active macular neovascularisation with a prechoroidal cleft and a baseline VA of 59 letters. Over the course of treatment with intravitreal faricimab VA in the left eye stabilised at 58 letters. OCT imaging showed a progressive reduction in the size of the prechoroidal cleft following intravitreal faricimab therapy. This structural improvement correlated with disease control and preservation of visual function.
CONCLUSIONS: In nAMD patients, OCT detection of prechoroidal cleft may serve as a valuable biomarker to assess disease activity and guide individualised treatment approaches. The clinical significance and pathogenesis of prechoroidal cleft remain to be fully elucidated.

PRIKAZ PRIMERA: SPREMEMBE ŽILNICE PRI NEVROFIBROMATOZI TIPA 1

CASE REPORT: CHOROIDAL ABNORMALITIES IN NEUROFIBROMATOSIS TYPE 1

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Nevrofibromatoza tip 1 (NF1) je avtosomno dominantna nevrokutana bolezen. Je relativno redka, s pojavnostjo 1 na 3000 rojstev. Prizadene lahko skoraj vse organe, najpogosteje kožo, kosti in živčevje. Pogosto so prizadete tudi oči in adneksi. Prisotnost Lischevih vozličev šarenice, gliomi vidnega živca, cafe-au-lait lezije na vekah so diagnostični kriteriji za NF1. Razvoj slikovnih diagnostičnih metod je v zadnjih letih omogočil prepoznavo novih očesnih sprememb. To so spremembe v žilnici, hiperpigmentacije in nepravilnosti mrežničnega žilja. Spremembe žilnice so dodane k diagnostičnim kriterijem za NF1 kot alternativa za prisotnost Lischevih vozličev šarenice. Njihova prevalenca je 64- 98%. Histopatološko so spremembe žilnice ovoidna telesca, ki jih tvorijo hiperplastične Schwannove celice, melanociti nevralnega grebena in ganglijske celice. Spremembe so asimptomatske in jih z običajnim oftalmološkim pregledom, slikanjem avtofluorescence ali s fluoresceinsko angiografijo ne zaznamo. S slikanjem očesnega ozadja s svetlobo blizu infrardeče (NIR) in z optično koherenčno tomografijo (SD- OCT) pa spremembe jasno vidimo kot svetle vozliče oziroma hiperreflektivne spremembe v žilnici. Predstavili bomo primer pacientke z znano NF1 in prvič diagnosticiranimi spremembami v žilnici.

Neurofibromatosis type 1(NF1) is an autosomal dominant neurocutaneous disorder. It is a relatively rare disease, affecting 1 in 3000 births. It can affect almost all organs of the body, but most commonly affects the skin, bones and nervous system. The eye and adnexa are frequently involved in NF1. Iris Lisch nodules, optic gliomas, eyelid cafe-au-lait spots are diagnostic hallmarks in NF1. In recent years new manifestations have been described in the ocular system in NF1, due to recent progress in multimodal imaging in ophthalmology. These are choroidal abnormalities, hyperpigmented spots and retinal vascular abnormalities. Choroidal abnormalities (CAs) have been added to the actual diagnostic criteria for NF1. They are not added as a separate criterion but introduced as an alternative to the presence of iris Lisch nodules. They have the prevalence between 64 and 98%. CAs, as described in histopathological studies, are ovoid bodies, consisting of hyperplastic Schwann cells, neural crest-derived melanocytes and ganglion cells. CAs are asymptomatic and undetectable with conventional ophthalmoscopic examination or by means of autofuorescence and fuorescein angiography. However, they are visible as bright, pathcy nodules on near infrared reflectance images (NIR) and spectral-domain optical coherence tomography (SD-OCT). We present a patient with NF1 and choroidal abnormalities which were detected for the first time by using NIR and SD-OCT.

BOLIVIA TRIVIA

BOLIVIA TRIVIA

Marko Šulak
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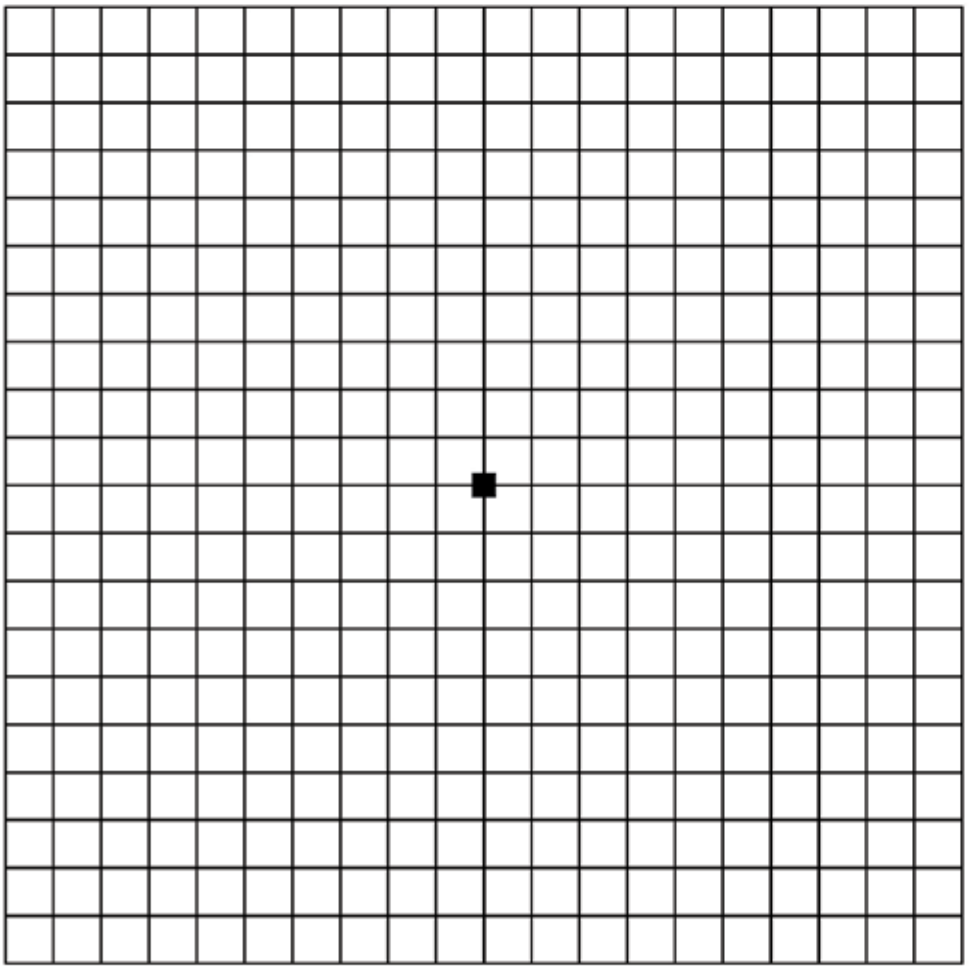

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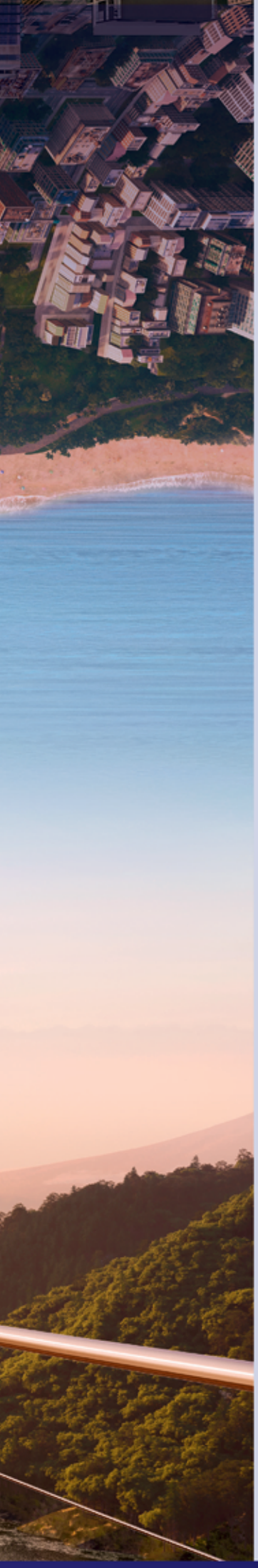

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▼**Za to zdravilo se izvaja dodatno spremljanje varnosti. Tako bodo hitreje na voljo nove informacije o njegovi varnosti. Zdravstvene delavce naprošamo, da poročajo o katerem koli domnevnem neželenem učinku zdravila. Kako poročati o neželenih učinkih, si poglejte skrajšani povzetek glavnih značilnosti zdravila pod „Poročanje o domnevnih neželenih učinkih".**

Ime zdravila: Vabysmo 120 mg/ml raztopina za injiciranje/Vabysmo 120 mg/ml raztopina za injiciranje v napolnjeni injekcijski brizgi
Kakovostna in količinska sestava: En ml raztopine vsebuje 120 mg faricimaba. Napolnjena injekcijska brizga: Ena napolnjena injekcijska brizga vsebuje 21 mg faricimaba v 0,175 ml raztopine. To zagotavlja uporabno količino za enkraten odmerek 0,05 ml raztopine, ki vsebuje 6 mg faricimaba. Viala: Ena viala vsebuje 28,8 mg faricimaba v 0,24 ml raztopine. Ta količina zadošča za injiciranje enkratnega odmerka 0,05 ml raztopine, ki vsebuje 6 mg faricimaba. Faricimab je humanizirano protitelo, pridobljeno v kulturi celic jajčnika kitajskega hrčka s tehnologijo rekombinantne DNK. **Terapevtske indikacije:** Zdravilo Vabysmo je indicirano pri odraslih bolnikih za zdravljenje: neovaskularne (vlažne) starostne degeneracije makule (nSDM), okvare vida zaradi diabetičnega makularnega edema (DME) in okvare vida zaradi makularnega edema, ki nastane kot posledica zapore mrežnične vene (RVO) - zapore centralne mrežnične vene (CRVO) ali zapore veje mrežnične vene (BRVO). **Odmerjanje in način uporabe:** Odmerjanje: *Neovaskularna (vlažna) nSDM:* Priporočeni odmerek zdravila je 6 mg (0,05 ml raztopine), injiciran intravitrealno na 4 tedne za prve 3 odmerke. Po 16 in/ali 20 tednih od začetka zdravljenja je priporočljivo oceniti aktivnost bolezni na podlagi anatomskega izida in/ali vidne ostrine. Pri bolnikih brez aktivne bolezni se lahko faricimab uporablja na 16 tednov. Bolnike, pri katerih je bolezen še aktivna, se lahko zdravi na 8 tednov ali 12 tednov. Če se anatomski izid in/ali vidna ostrina spremenita, je treba presledek med injiciranji zdravila ustrezno prilagoditi. *Okvara vida zaradi DME in makularni edem, ki nastane kot posledica RVO:* Priporočeni odmerek zdravila je 6 mg, injiciran intravitrealno na 4 tedne; morda bodo potrebne 3 zaporedne mesečne injekcije ali več. Na podlagi zdravnikove presoje bolnikovega anatomskega izida in/ali spremembe vidne ostrine je mogoče odmerni interval podaljšati v korakih po največ 4 tedne. Če se anatomski izid in/ali vidna ostrina spremenita, je treba presledek med injiciranji zdravila ustrezno prilagoditi; presledek med injiciranji mora biti krajši, če se anatomski izid in/ali vidna ostrina poslabša. *Trajanje zdravljenja:* Zdravilo je namenjeno za dolgotrajno zdravljenje. Če vidna ostrina in/ali anatomski izid kažeta, da nadaljnje zdravljenje bolniku ne koristi, je treba zdravljenje ukiniti. Način uporabe: Samo za intravitrealno injiciranje. Intravitrealno injiciranje je treba opraviti v aseptičnih pogojih. Pred intravitrealnim injiciranjem je treba skrbno oceniti bolnikovo zdravstveno anamnezo o preobčutljivostnih reakcijah. **Kontraindikacije:** Preobčutljivost na učinkovino ali katero koli pomožno snov. Aktivna okužba očesa ali okolice očesa ali sum na takšno okužbo. Akutno intraokularno vnetje. **Posebna opozorila in previdnostni ukrepi:** Reakcije na intravitrealno injiciranje: Tako kot pri drugih intravitrealnih injekcijah se tudi pri injiciranju faricimaba lahko pojavijo endoftalmitis, intraokularno vnetje, regmatogeni odstop mrežnice, raztrganina mrežnice in iatrogena travmatska katarakta. Bolnikom je treba naročiti, da morajo nemudoma povedati za kakršne koli simptome, na primer bolečino, izgubo vida, fotofobijo, zamegljen vid, plavajoče motnjave v vidnem polju ali pordelost, ki nakazujejo endoftalmitis, ali katerega od drugih zgoraj naštetih neželenih učinkov, da je mogoče takojšnje in ustrezno ukrepanje. Zvišanje intraokularnega tlaka: V 60 minutah po intravitrealnem injiciranju so opažali prehodno zvišanje intraokularnega tlaka; to velja tudi za faricimab. Posebna previdnost je potrebna pri bolnikih s slabo urejenim glavkomom. Po injiciranju je vedno treba spremljati očesni tlak in perfuzijo papile vidnega živca ter po potrebi ustrezno ukrepati. Sistemski učinki: Po intravitrealnih injekcijah zaviralcev žilnega endotelijskega rastnega dejavnika so poročali o sistemskih neželenih učinkih, med drugim tudi o arterijskih trombemboličnih dogodkih. Teoretično obstaja tveganje, da so ti učinki lahko povezani z zavrtjem VEGF. Imunogenost: Faricimab je terapevtska beljakovina, zato je lahko imunogen. Bolnikom je treba naročiti, naj zdravnika obvestijo o vseh znakih ali simptomih intraokularnega vnetja, npr. o izgubi vida, bolečini v očesu, večji občutljivosti na svetlobo, plavajočih motnjavah v vidnem polju ali vse močnejši pordelosti oči; to so lahko klinični znaki preobčutljivosti na faricimab. Obojestransko zdravljenje: Obojestransko zdravljenje lahko vodi do neželenih učinkov na obeh očesih in lahko vodi do povečanja sistemske izpostavljenosti, kar lahko poveča tveganje za sistemske neželene učinke. Dokler podatki za obojestransko zdravljenje niso na voljo, to predstavlja teoretično tveganje faricimaba. Uporaba napolnjene injekcijske brizge z drugimi injekcijskimi iglami: Napolnjeno injekcijsko brizgo uporabljajte samo s priloženo injekcijsko filtrirno iglo. Kliničnih podatkov o uporabi napolnjenih injekcijskih brizg z drugimi injekcijskimi iglami ni. Prekinitev zdravljenja: Zdravljenje je treba prekiniti pri bolnikih: z regmatogenim odstopom mrežnice, makularno luknjo III. ali IV. stopnje, raztrganino mrežnice; pri katerih se je po zdravljenju najboljša korigirana vidna ostrina zmanjšala za ≥ 30 črk v primerjavi z zadnjo oceno vidne ostrine; z intraokularnim tlakom ≥ 30 mmHg; s subretinalno krvavitvijo, ki zajema središče fovee, ali če krvavitev zajema ≥ 50 % celotne površine lezije; z izvedeno ali načrtovano intraokularno operacijo v zadnjih ali prihodnjih 28 dneh. Zatrganje pigmentnega epitelija mrežnice: Med dejavniki tveganja za zatrganje pigmentnega epitelija mrežnice po zdravljenju nSDM z zaviralci VEGF je obsežen in/ali visok odstop pigmentnega epitelija mrežnice. Pri uvedbi zdravljenja s faricimabom pri bolnikih s takšnimi dejavniki tveganja za zatrganje pigmentnega epitelija mrežnice je potrebna previdnost. **Medsebojno delovanje z drugimi zdravili in druge oblike interakcij:** Glede na biotransformacijo in izločanje faricimaba ni pričakovati medsebojnih delovanj z drugimi zdravili. Vseeno faricimaba ne smemo dati sočasno z drugimi sistemskimi ali očesnimi zaviralci VEGF. **Neželeni učinki:** Najpogostejši neželeni učinki, o katerih so poročali, so bili katarakta, vezničnа krvavitev, odstop steklovine, zvišan očesni tlak, motnjave v steklovini, bolečina v očesu in zatrganje pigmentnega epitelija mrežnice (samo pri nSDM). Poročanje o domnevnih neželenih učinkih: Poročanje o domnevnih neželenih učinkih zdravila po izdaji dovoljenja za promet je pomembno. Omogoča namreč stalno spremljanje razmerja med koristmi in tveganji zdravila. Od zdravstvenih delavcev se zahteva, da poročajo o katerem koli domnevnem neželenem učinku zdravila na: Javna agencija Republike Slovenije za zdravila in medicinske pripomočke, Sektor za farmakovigilanco, Nacionalni center za farmakovigilanco, Slovenčeva ulica 22, SI-1000 Ljubljana, Tel: +386 (0)8 2000 500, Faks: +386 (0)8 2000 510, e-pošta: h-farmakovigilanca@jazmp.si, spletna stran: www.jazmp.si. Za zagotavljanje sledljivosti zdravila je pomembno, da pri izpolnjevanju obrazca o domnevnih neželenih učinkih zdravila navedete številko serije biološkega zdravila. **Režim izdaje zdravila:** ŽZ. **Imetnik dovoljenja za promet:** Roche Registration GmbH, Emil-Barell-Strasse 1, 79639 Grenzach-Wyhlen, Nemčija. Za podrobnejše informacije glejte celoten Povzetek glavnih značilnosti zdravila. **Verzija: 1.0/25**

Reference: 1. Povzetek glavnih značilnosti zdravila Vabysmo, dostopano avgust 2024 na https://www.ema.europa.eu/sl/documents/product-information/vabysmo-epar-product-information_sl.pdf

DODATNE INFORMACIJE SO NA VOLJO PRI:
Roche farmacevtska družba d.o.o., Stegne 13G, Ljubljana

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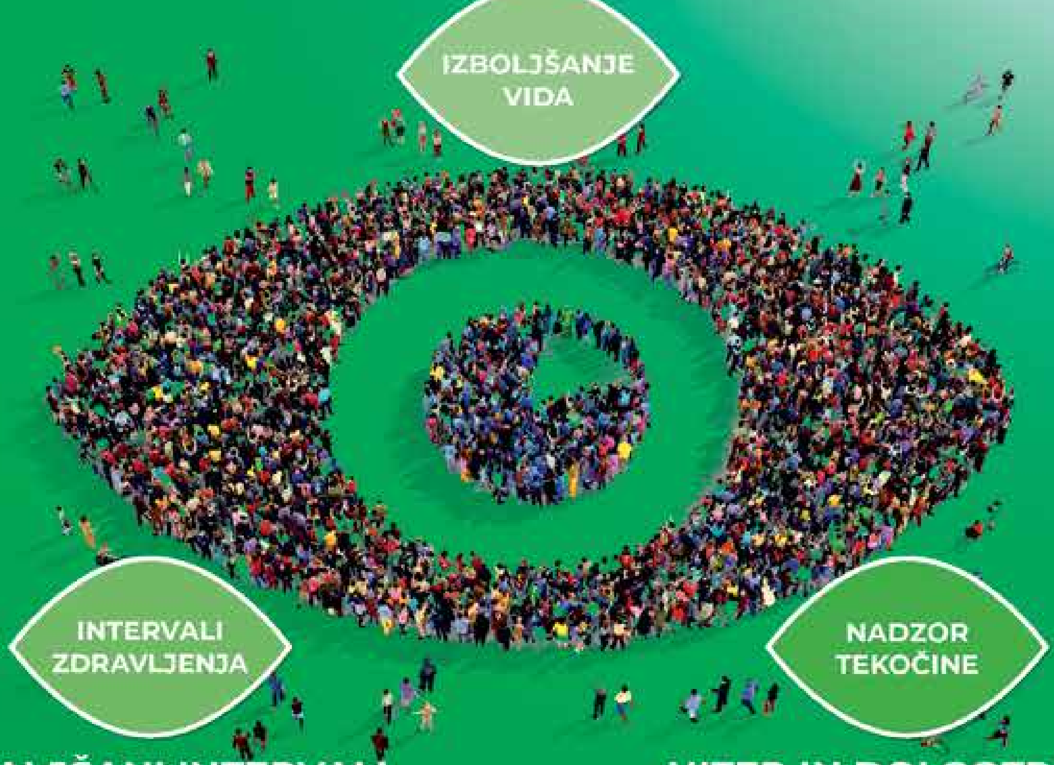
DOLGOTRAJNO IZBOLJŠANJE VIDA[1, 2, b]



PODALJŠANI INTERVALI MED INJEKCIJAMI[1, 2]

HITER IN DOLGOTRAJEN NADZOR TEKOČINE[1, 2, c]

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[illegible]

Viri: 1. Lanzetta et al. Lancet. 2024;403(10432):1141-1152. 2. Brown DM et al. Lancet. 2024;403(10432):1153-1163.

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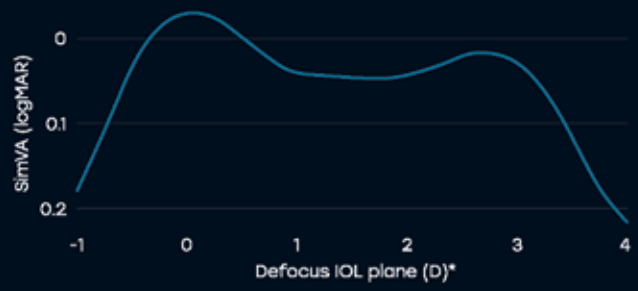

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References:

1. **TECNIS PureSee™** IOL. Model ZEN00V. DfU INT. Z311973. current revision.
2. DOF2023CT4011 – Simulations of visual symptoms under defocus for **TECNIS PureSee™** IOL. 29 March 2023.
3. DOF2023CT4036 – Clinical Investigation of the **TECNIS™** IOL. Models C1V000 and C2V000. Contrast Sensitivity Outcomes. 17 July 2023.
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5. Black D, et al. Clinical evaluation of tolerance to residual refractive errors following implantation with a refractive extended-depth-of-focus (EDF) IOL. Abstract ESCRS 2023. REF2023CT4129.
6. DOF2023CT4043 - Clinical Investigation of the **TECNIS™** IOL. Models C1V000 and CV2000. Patient Satisfaction Outcomes. 18 July 2023.

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1. Tržni obseg 2022 IOL tržno poročilo
2. Interni podatki podjetja Alcon, REF-18881, 2022
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5. Zhu D. et al., Rate of Complete Spectacle Independence with a Trifocal Intraocular Lens: A Systematic Literature Review and Meta-Analysis, Journal of Ophthalmology and Therapy, 02/2023
6. Lwowski C. et al. Visual and patient-reported factors leading to satisfaction after implantation of diffractive EDOF and trifocal intraocular lenses. J Cataract Refract Surg 2021 Aug 18. doi: 10.1097/j.jcrs.0000000000000780

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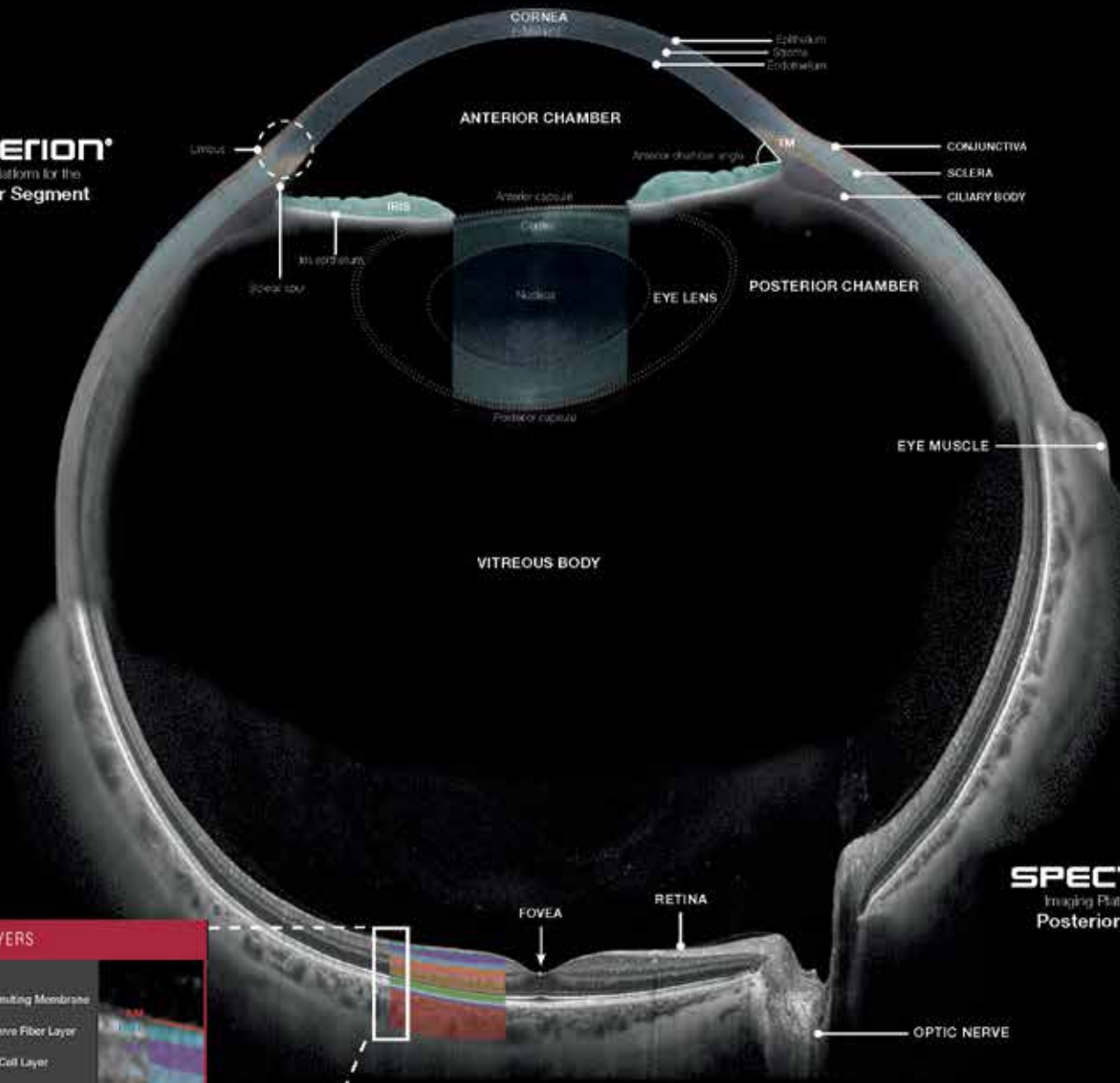

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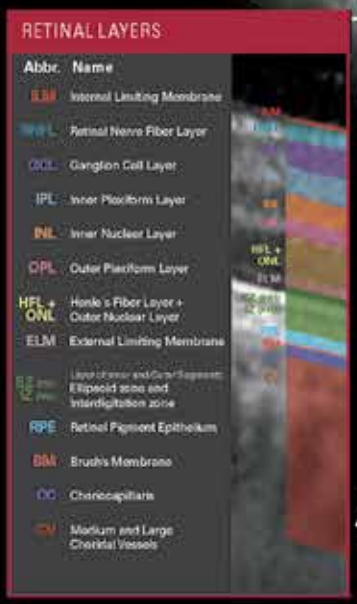

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