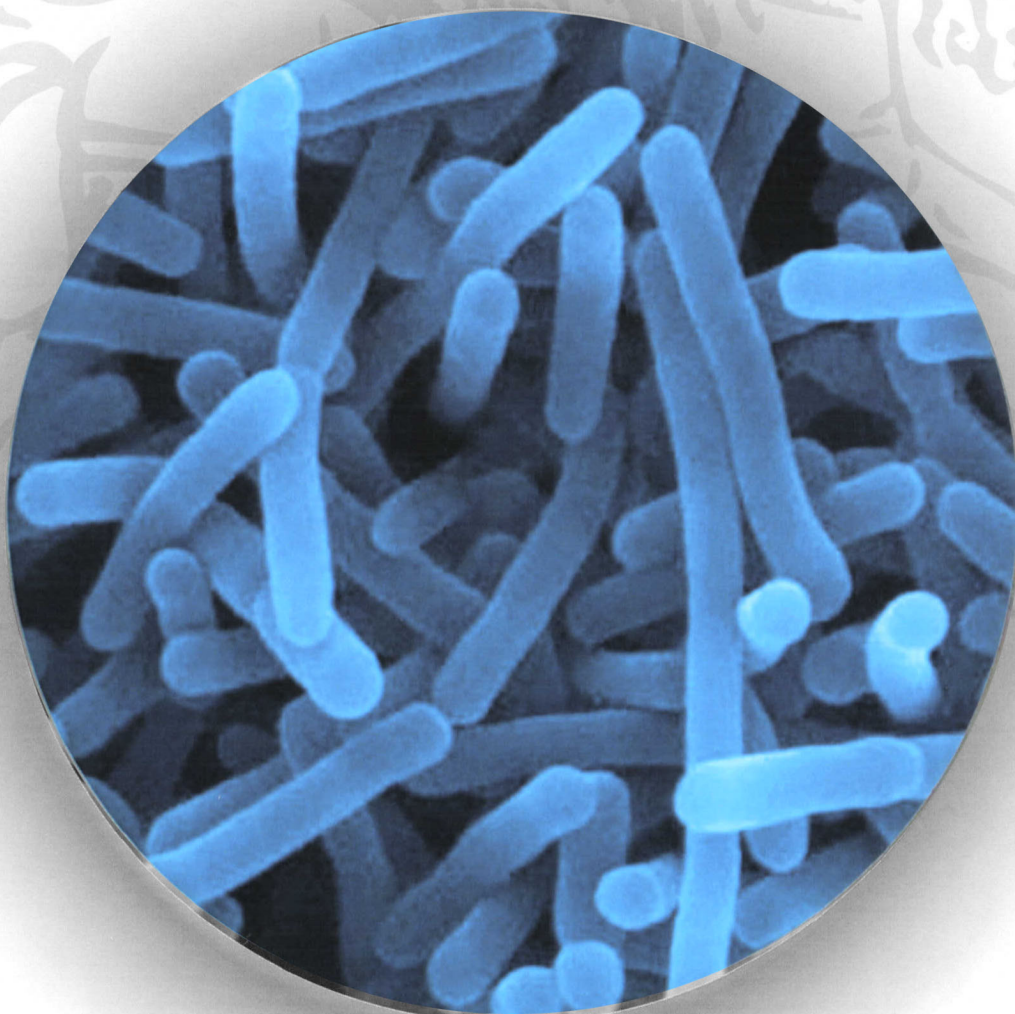


UDK 61(05)=862=20
GOD. 52/2022, Supl 1

ISSN 0351-0093
Coden: MEJAD6

medica jadertina



7. Hrvatski rinološki kongres

Zagreb, 24. – 25. veljače 2022.

Med. Jad. God 52. Supplement Str. 1s-52s Zadar 2022.

Nakladnik
Opća bolnica Zadar

Publisher
Zadar General Hospital

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Telefon (023) 315-508; 505-270, fax: (023) 312-724, e-mail: opca-bolnica-zadar@zd.t-com.hr

Časopis MEDICA JADERTINA objavljuje uvodnike, izvorne znanstvene i stručne članke, prethodna priopćenja,
pregledne članke, izlaganja sa znanstvenih skupova i druge priloge iz osnovnih i primijenjenih medicinskih područja.

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reviewed articles, presentations from scientific conferences and other enclosures from basic and applied medical fields.*

Medica Jadertina izlazi četiri puta godišnje. Godišnja pretplata iznosi 100 kn. Broj žiro računa: HR5924020061100879223
kod Erste&Steiermärkische Bank d.d., s naznakom: Za Medica Jadertina i adresom 23000 Zadar, B. Peričića 5, p.p. 291.

*Medica Jadertina is published four times a year. The annual subscription is 20 € payable to Erste&Steiermärkische Bank,
account number HR5924020061100879223, SWIFT: ESBCHR22 for Medica Jadertina and the address Croatia, 23000
Zadar, B. Peričića 5, p.p. 291.*

Medica Jadertina je indeksirana u EMBASE/Excerpta Medica, Scopus.
Medica Jadertina is indexed in EMBASE/Excerpta Medica, Scopus.

Digitalna verzija časopisa ISSN 1848-817X (Online) dostupna je na portalu znanstvenih časopisa Republike
Hrvatske: <http://hrcak.srce.hr>

*The digital version of the magazine ISSN 1848-817X (Online) is available at the portal of the scientific papers
of Croatia: <http://hrcak.srce.hr>*

Rješenje i priprema korica: NILO KARUC
Priprema: BARBARA KOTLAR
Tisak: FG GRAFIKA, Zadar
Naklada 120 primjeraka
Printed in Croatia

7. Hrvatski rinološki kongres

Knjiga sažetaka

Abstract book

Gosti urednici

**GORAZD POJE
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7. Hrvatski rinološki kongres s međunarodnim sudjelovanjem

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Pregnancy-Induced Rhinitis (PIR): Neglected Disease

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Introduction: Pregnancy-induced rhinitis (PIR) is a widely present disease that manifests itself during pregnancy with complete resolution of symptoms after delivery.

Aim: In the ambidirectional longitudinal cohort study, the prevalence of PIR is evaluated as well as the appearance and character of its symptoms, and its impact on the quality of life.

Methods: Six hundred eighty-one (681) women completed questionnaires about nasal symptoms a day after delivery and each woman with nasal symptoms was interviewed 30 days later and data on symptom duration and quality were recorded.

Results: The prevalence of PIR was 31.86% (N=217), 47.14% (N=21) women had no nasal symptoms and 21% (N=143) of participants had prior sinonasal disease. The clinical presentation of pregnancy rhinitis included nasal obstruction as the most common symptom, followed by rhinorrhea, postnasal secretion, nose itching, sneezing, and hyposmia. The median duration of PIR was 4 months with their complete resolution of symptoms between the 2nd and 16th day after delivery in the majority of respondents. PIR was diagnosed significantly more often if the women carried a female child. PIR affected the quality of life during pregnancy in 53.9% women (N=117), with an average VAS score of 8. It seems that pregnancy may affect the course of previously present sinonasal disease (allergic rhinitis, chronic rhinosinusitis, nonallergic rhinitis, or non-infectious rhinitis prior to the pregnancy).

Conclusion: PIR is a common clinical entity but still neglected and insufficiently researched. We propose a definition of PIR. PIR is a non-allergic, non-infectious symptomatic inflammation of the nasal mucosa caused by a hormonal imbalance during pregnancy, lasting 6 or more weeks and resolving spontaneously within 4 weeks post-delivery, characterized with the presence of at least one nasal symptom (nasal obstruction, but also rhinorrhoea, nose itching, sneezing and/or hyposmia).

Keywords: pregnancy, rhinitis, quality of life

Anatomical and clinical features of Mladina type 6 nasal septum deformation and its impact on speech and hearing performances

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Aim: The aim of this study was to detect the frequency of type 6 deformation overall compared to the results obtained by the conventional diagnostic method and to determine if there was a difference according to this deformation type in speech and hearing performances.

Methods: The study was performed at the Institute of Anatomy, where a total of 114 randomly selected skulls were scanned by the cone-beam technique (CBCT). The other group of 100 patients, 50 with and 50 without type 6 deformation was examined by ORL and speech therapists at the ORL HNS Department to determine if there was a significant deterioration in speech and hearing performances between those groups.

Results: There was a statistically significant difference ($p < 0.0001$) in the frequency of type 6 deformation as diagnosed by visual inspection (22.8%) and computed tomography (7.9%). No statistically significant difference was found between the two groups of patients with or without type 6 deformation in speech and hearing performances according to the patient's age and sex.

Conclusions: The frequency of type 6 nasal septal deformation was higher by visual inspection of the skulls than by CT imaging. Septal deformation type 6, probably have one-fourth to one-fifth people in the population, so the number of clinically overlooked and/or unrecognized types 6 was much greater than we thought it to be. According to a high frequency of those deformations, we explored if there was a deterioration in speech and hearing performances in those patients but we did not find significant difference according to the patient's age and sex.

Keywords: nasal septum, septal deformation, speech, hearing

Dijagnostičko-terapijski pristup kod recidivirajuće nosne polipoze

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Nosna polipoza je čest upalni poremećaj gornjih dišnih putova za koji se procjenjuje da zahvaća do 4,3% odraslih u Europi. Zbog simptoma koje uzrokuju značajno narušava kvalitetu života bolesnika. Manji polipi su često asimptomatski, ali kako rastu mogu dovesti do glavobolje, gubitka mirisa i okusa, hrkanja, začepjenosti, curenja ili krvarenja nosa, postnazalnog slijevanja, pritiska i boli u sinusima, licu i gornjim zubima. Nazalni polipi obično se liječe kombinacijom medikamentozne terapije i kirurških intervencija. Tretman izbora u liječenju ove bolesti su kortikosteroidna terapija (nazalna, kratkotrajna oralna) i funkcionalna endoskopska operacija sinusa (FESS). Lokalni nazalni kortikosteroidi pokazali su značajnu učinkovitost u smanjenju veličine polipa i začepljenja nosa kod bolesnika s nazalnom polipozom. Ako intranazalni i oralni kortikosteroidi ne uspiju u dovoljnoj mjeri reducirati tkivo polipa, a bolesnik ima trajnu blokadu ili anosmiju, razmatra se operacija sinusa. Operacija sinusa može pružiti brzo ublažavanje simptoma, a u kombinaciji s preoperativnom terapijom kortikosteroidima mogu se smanjiti polipi, omogućiti bolja vizualizaciju normalne anatomije, te potencijalno smanjiti intraoperativno krvarenje. Zbog visoke stope recidiva, cilj liječenja nosnih polipa je postizanje i održavanje kliničke kontrole bolesti, koja se može mjeriti težinom simptoma ili/i endoskopskom analizom. Drugim riječima, uz primjenu lokalne terapije bolesnici ne bi trebali imati simptome, odnosno simptomi ne bi trebali narušavati kvalitetu života. Studije procjenjuju da 40% bolesnika ima recidivirajuću polipozu unutar 18 mjeseci nakon operacije, te je stoga važno da postoperativno slijede intranazalni kortikosteroidi i druge odgovarajuće medicinske terapije (npr. desenzibilizacija aspirinom u bolesnika s AERD), kako bi se spriječio naknadni ponovni rast polipa.

Ključne riječi: recidivirajuća nosna polipoza, intranazalni kortikosteroidi, FESS

Virtualna endoskopija i trodimenzionalno volumno renderiranje primjenjeni u bolesnika s malignim tumorom maksilarnog sinusa

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Ciljevi: Prikaz mogućnosti primjene trodimenzionalnog volumnog renderiranja i virtualne endoskopije u obradi bolesnika s malignim tumorom maksilarnog sinusa.

Metode rada: MSCT glave uz debljinu slojeva od 0,6 mm napravljen je u bolesnika s karcinomom desnog maksilarnog sinusa. Korišten je Siemens Somatom Emotion 16 skener, uz standardni protokol za snimanje paranazalnih sinusa. Nizovi aksijalnih slika pohranjeni su u DICOM formatu na radnoj stanici na kojoj je obavljeno postprocesiranje podataka 3DVR i VE pomoću programa Syngo 2006G.

Rezultati: Tumor je smješten na stražnjem zidu i dnu maksilarnog sinusa, te dijelom na stražnjem dijelu medijalnog zida. Konzumirao je stražnju stijenku i pod sinusa, te dio alveolarnog grebena ispod njega. Trodimenzionalni VR prikaz (3DVR) dao je daljni uvid u širenje tumora prema okolnim anatomskim strukturama.

Zaključak: Prikazi dobiveni virtualnom endoskopijom i trodimenzionalnim volumnim renderiranjem su kvalitetni i dobra dopuna klasičnim metodama dijagnostike.

Ključne riječi: virtualna endoskopija, MSCT, maksilarni sinus

Dermoidna cista nosa – prikaz slučaja

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Uvod: Dermoidne ciste nosa su rijetke kongenitalne anomalije nastale zbog defekta neuralne cijevi u ranom embrionalnom razvoju. Prezentiraju se kao mekotkivna masa, te mogu biti smještene između glabele, duž dorzuma nosa, sve do baze kolumele. Zbog nespecifičnog izgleda često ostaju neprepoznate do razvoja komplikacija. U dijagnostici je značajna slikovna obrada, a liječenje je kirurško.

Prikaz slučaja: Žensko dijete u dobi od 4 mjeseca je inicijalno pregledano zbog mekotkivne tvorbe dorzuma nosa do 4 mm u promjeru, prisutne od rođenja. Učinjena je slikovna obrada magnetskom rezonancijom, te su dobiveni slikovni prikazi cističnih lezija koje morfološki odgovaraju dermoidnoj cisti nosa. Zbog niske životne dobi djeteta indicirano je redovito praćenje, a s navršениh 16 mjeseci života odlučimo se za kirurški zahvat. Pristupi se obrnutom T incizijom na kožu dorzuma nosa iznad promjene, te se subkutane tvorbe ekscidiraju, potom se učini medijalna osteotomija i ekstirpacija tumora, a tračak koji se širi prema duri se presječe. Pristiglim patohistološkim nalazom verificirana je dermoidna cista. Postoperativno praćenje prolazi uredno, te se kontrolnom magnetskom rezonancijom nakon 6 mjeseci i nakon dvije godine ne nalazi rezidue.

Zaključak: Rano prepoznavanje i kirurško liječenje su nužni kako bi se spriječila mogućnost razvoja lokalne atrofije kosti, distorzije nosa, te intrakranijalnih infekcija. Dermoidne ciste nosa se liječe kirurški, a odluka o zahvatu ovisi o dobi djeteta i mogućim komplikacijama.

Ključne riječi: dermoidna cista, kongenitalne anomalije, ekstirpacija

Revizijska rinoplastika: izazov za kirurga, katastrofa za bolesnika

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Uvod: Svaki bolesnik koji ide na operaciju nosa, upoznat je s mogućnošću potrebe sekundarnog zahvata, a vjerojatnost kojega prema literaturi iznosi između 5 i 15%. Planirane rekonstrukcije nosa u dva ili više akta su rijetke, tako da sekundarna rinoplastika najčešće upućuje na neuspjeh primarne operacije.

Bolesnici i metode: Analizirali smo vlastite rinoplastike u razdoblju od srpnja 2020. do siječnja 2021., kao i noviju literaturu vezanu uz učestalost i razloge za reviziju.

Rezultati: U promatranom razdoblju uočili smo porast udjela revizijskih rinoplastika među ukupnim operacijama nosa. Razlozi za reviziju u skladu su s razlozima opisanim u literaturi, a dijele se na funkcionalne i estetske.

Zaključak: Neovisno o uzrocima sekundarne rinoplastike, porast udjela sekundarne unutar svih rinoplastika predstavlja negativan trend. Smatramo da je bolje postavljanje indikacija i bolja informiranost bolesnika u pogledu očekivanja jedini način za smanjenje udjela revizijskih rinoplastika.

Ključne riječi: rinoplastika, revizija, indikacija

Endoskopska kirurgija tumora nosa, sinusa i baze lubanje: može li biti onkološki radikalna?

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U zadnja dva desetljeća endoskopska kirurgija etablirala se kao legitiman pristup rješavanju malignih tumora nosa, sinusa i baze lubanje. Popis indikacija i kontraindikacija za endoskopski pristup mijenjao se tijekom godina na način da je lista indikacija rasla, a kontraindikacija se smanjivala. To je prvenstveno posljedica razvoja endoskopskog instrumentarija, ali i paralelnog usavršavanja kirurških tehnika. Kod većine malignih tumora ovog područja, osobito u višem T stadiju indicirana je postoperativna radioterapija, a ovisno o histološkom tipu i kemoterapija. Činjenica je da su i danas smjernice za ove tumore relativno općenite; budući da oni čine manje od 5% tumora glave i vrata zbog čega i dalje nema velikih serija tumora istog histološkog tipa. Od kada na Klinici za ORL KBC Sestre milosrdnice endoskopski operiramo maligne tumore, primijetili smo više slučajeva histološki malignih tumora, prvenstveno adenokarcinoma, koji su usprkos većim dimenzijama inserirali na uskoj peteljci. Ovakav rast tumora omogućava radikalno odstranjenje endoskopskim pristupom. U više slučajeva primjetili smo da je preoperativno usprkos najboljoj mogućoj radiološkoj obradi nerijetko teško ocijeniti način rasta tumora u smislu da li je infiltrativan ili ekspanzivan. Način rasta tumora pokazatelj je njegovog biološkog ponašanja, često se endoskopski tijekom operacije nabolje može ocijeniti i vjerujemo da bi mogao korelirati s prognozom. Cilj rada je pregledom novije dostupne literature i na primjerima naših bolesnika pokazati trenutno stanje i principe liječenja ove patologije.

Ključne riječi: endoskopska kirurgija, tumori sinusa, tumori baze lubanje

Spontana rinolikvoreja: prikaz slučaja i pregled literature

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Uvod: Rinolikvoreja nastaje kao posljedica komunikacije sinonazalnog i subarahnoidalnog prostora, a označava gubitak cerebrospinalnog likvora kroz sinonazalni prostor. Rinolikvoreje dijelimo na primarne ili spontane i sekundarne. Sekundarne su mnogo učestalije, a najčešće su uzrokovane traumom. Spontane su rijetke, čine manje od 5% ukupnih rinolikvoreja, često predstavljaju izazov u postavljanju pravodobne dijagnoze, te se mogu komplicirati po život opasnim stanjima, poput akutnog meningitisa ili intrakranijskog apscesa. Radiološka obrada bi trebala biti usmjerena otkrivanju točne lokalizacije fistule, kako bi se moglo pristupiti kirurškom liječenju koji čini glavni izbor liječenja.

Opis slučaja: Prikazali smo bolesnicu u dobi od 52 godine s pojavom unilateralne desnostrane bistre sekrecije iz nosa. U uzorku nazalnog sekreta potvrđen je beta-2-transferin. CT-om je verificirana prazna sela turcika, a MR-om lokalizacija likvoreje kroz kribriformnu ploču u celule desnog etmoidalnog sinusa. Plastika defekta je učinjena endonazalnim pristupom, a za bolju vizualizaciju je intratekalno apliciran fluorescin.

Pregled literature: Pregledali smo PubMed-ovu bazu podataka s informacijama o literaturi vezanoj uz spontanu rinolikvoreju s posebnim osvrtom na dijagnostiku i kirurško liječenje endoskopskim transnazalnim pristupom.

Ključne riječi: rinolikvoreja, beta-2-transferin, endoskopski transnazalni pristup

Factors associated with postoperative pain following functional sinus surgery

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Introduction: Functional endoscopic sinus surgery is a minimally invasive technique used to restore sinus ventilation and normal function. Nowadays, it is a common procedure with minimal complication rate. As with any other surgical procedure, post-operative pain is something to expect.

Methods: We conducted a retrospective study of postoperative pain using a VAS score scale. Statistical analysis was performed using the Mann Whitney U test and Pearson test for correlation between postoperative pain and the extension of intraoperative nasal packing and administered anesthetics, perioperative antibiotic administration, age and duration of operation.

Results: 124 patients were enrolled in this study, the median age was 48 (21-75) years, the average duration of surgery was 103 (± 46.43) minutes, in 73.4% of patients surgery was bilateral, in 33% the procedure was revisional. 43.5% of patients received antibiotic therapy perioperatively. The mean VAS score was higher in the second postoperative day in patients with more extended nasal packing ($p=0.02$). We did not find any significant association between the age, duration of surgery, antibiotic therapy, remifentanyl intraoperatively and VAS scale. In the first postoperative day, in patients older than 50, the mean VAS score was 1.52 vs 0.97 in those younger than 50 ($p=0.19$).

Conclusion: Post-operative pain affects recovery, risk of post-operative complications and equally important – the quality of life. Preoperative evaluation with careful perioperative planning and individualized treatment can reduce post-operative pain and improve the quality of life of our patients. Our findings show us the need for better monitoring of post-operative pain.

Keywords: postoperative pain, sinus surgery, quality of life

Towards virtualization and optimization of sinus surgery planning and execution

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Introduction: The development of technology offers great possibilities for better understanding, design, standardisation, execution and subsequent mechanisation and automatisisation of manual work in complex human activities which are yet to be observed, such as in endoscopic sinus surgery (ESS) where deformable, flexible and biological work objects are present in rather small production quantities.

Aim: Those possibilities are achievable only by performing the capturing and thorough analysis of the existing ESS manual work process, where movements are further complicated by the variety of instruments/tools used in the different phases of the surgeon's work.

Methods: On the basis of the chosen surgery process, the paper tries to establish an integrated approach that would include experiments for motion capturing and analysis using traditional and modern methods and equipment, such as an optical video camera, predetermined motion time systems, Leap Motion Controller, Perception Neuron 2.0 and Emotiv EPOC+. Moreover, the research intent is to encompass not only physical but also accompanied mental work in the process.

Results: The mentioned integrated approach would enable more quality planning and execution of the chosen surgery process and the results expected in the near future could prove valuable initially in the training of new generations of ESS surgeons.

Conclusion: The possibility to analyse and measure human body movements including mental energy is always of great importance for work but also for everyday life. Technology development, particularly in biometrics, results in new, more complex tools and higher levels of materialisation that cover and create more and more realities, that are offered for the involvement of human consciousness (eros). This allows the design and standardisation of manual work in human activities which are yet to be observed, especially those of low scale (small production volume, single-unit production), such as ESS surgery.

Keywords: endoscopic sinus surgery, technology, manual work process

Association between aryl hydrocarbon receptor and 4-hydroxynonenal in oxidative stress-mediated chronic rhinosinusitis with nasal polyps

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Background: Chronic rhinosinusitis with nasal polyps (CRSwNPs) is a distinct entity within the chronic rhinosinusitis group of diseases, which are chronic upper airway diseases with several pheno- and endotypes. Oxidative stress plays an important role in the pathogenesis of CRSwNPs.

Aim: The aim was to assess the association between the expression of the aryl hydrocarbon receptor (AhR) and 4-hydroxynonenal (4-HNE) in patients with CRSwNPs.

Methods: The study included 26 patients who underwent endoscopic sinus surgery – 14 patients with CRSwNPs, and 12 controls with healthy sinus mucosa. The expression of AhR and 4-HNE was assessed in tissue samples using immunohistochemistry. The level of 4-HNE in serum samples was measured using the ELISA assay. The total oxidative capacity (TOC) was assessed by measuring the peroxidase activity.

Results: Higher levels of 4-HNE expression were observed in tissues (3, range 1-3 vs. 0, range 0-0, $p < 0.001$) and serum (27.7 ± 11.5 vs. 9.8 ± 7.7 pmol/mg, $p < 0.001$) samples of CRSwNPs patients, as compared to healthy controls. A higher expression of AhR was found in inflammatory cells (plasma cells, lymphocytes, eosinophiles) of CRSwNPs patients, compared to controls (3, range 1-3 vs. 2, range 1-2, $p = 0.001$). There were no differences in TOC across groups (0.0285 ± 0.0207 vs. 0.02978 ± 0.0197 $\mu\text{M H}_2\text{O}_2$ eq., $p = 0.848$). Patients with bronchial asthma (57%) had abundant eosinophiles in tissue samples. Patients with recalcitrant CRSwNPs had higher 4-HNE serum levels, compared to non-recalcitrant cases (27.3 vs. 24.2 pmol/mg, $p = 0.339$).

Conclusion: Patients suffering from CRSwNPs have oxidative stress mediated overexpression of AhR, which is linked to a chronic inflammatory response in the paranasal sinus tissues.

Keywords: chronic rhinosinusitis, nasal polyps, oxidative stress

Biomarkeri kao prediktori izbora terapije i klinička iskustva ishoda biološke terapije kod bolesnika s teškom astmom

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Astma je česta bolest od koje u svijetu boluje 358 milijuna ljudi. Ona je heterogena bolest s brojnim fenotipovima, te različitim endotipovima. Fenotip je po definiciji vidljiva karakteristika bolesti koja je rezultat interakcije gena i okoline. Endotipovi astme predstavljaju određene biološke mehanizme koji uzrokuju ove uočene značajke. Poseban fenotip astme predstavlja teška astma, na koju otpada oko 5% ukupnoga broja bolesnika s astmom. Individualni pristup i personalizirana medicina apsolutni su imperativ, te se stoga istražuje kombinacija biomarkera u različitim endotipovima, u nadi da će pomoći istraživačima i kliničarima u boljoj procjeni bolesti i odabiru adekvatne biološke terapije kod bolesnika s teškom astmom. Komercijalno dostupni biomarkeri u teškoj astmi su: IgE, eozinofili u krvi i sputumu, kationski eozinofilni protein (ECP) u serumu, eozinofilni neurotoksin (EDN), neutrofilni u krvi i sputumu, FeNO, leukotrieni i leptin. Dodatno, periostin i citokini IL-4, IL-5 i IL-13 su obećavajući/potencijalni biomarkeri, koje je potrebno validirati u daljnjim kliničkim ispitivanjima. Biološkom terapijom u Klinici Jordanovac do lipnja 2021. godine liječeno je 275 bolesnika. Anti-IL 5 terapijom (mepolizumab, benralizumab, reslizumab), liječio se 201 bolesnik, dok je 74 bolesnika primalo anti-IgE terapiju (omalizumab). Tijekom vremena provedena je studija koja je uključivala bolesnike koji su liječeni anti-IL5 terapijom dulje od godinu dana. Studija je uključivala 41 bolesnika, od kojih je 18 primalo mepolizumab, 11 benralizumab i 12 reslizumab. Medijan dob bolesnika bio je 58 godina a trajanja terapije 2 godine. Većina bolesnika bile su žene (61%). Studija je pokazala da su sva tri korištena lijeka dovela do značajnog smanjenja broja godišnjih egzacerbacija astme i poboljšanja kontrole bolesti (mjerene ACT skalom). Terapija mepolizumabom bila je povezana sa statistički značajnim smanjenjem FeNO. Terapija reslizumabom i mepolizumabom bila je povezana sa statistički značajnom redukcijom doze kortikosteroida, gdje je reslizumab doveo do najbrže redukcije doze kortikosteroida.

Iako naši podaci daju određeni uvid u ishode biološke terapije, potrebna je veća skupina bolesnika kako bi se mogli donijeti precizniji zaključci koji bi pomogli u odabiru optimalne terapije.

Ključne riječi: teška astma, biomarkeri, biološka terapija

Inducirana hipotenzija u općoj anesteziji kod funkcionalnih endoskopskih operacija sinusa- pregled literature

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Funkcionalne endoskopske operacije sinusa su minimalno invazivni operativni zahvati koji se ponajviše rade kod refraktornih kroničnih rinosinitisa i kroničnih polipoznih rinosinitisa.

Manji zahvati se mogu vršiti u lokalnoj anesteziji, dok se opsežniji zahvati izvode u općoj anesteziji.

Zahvati koji se vrše u općoj anesteziji dopuštaju operateru nepomično operacijsko polje, osiguran dišni put bolesnika, adekvatnu analgeziju i bolje pozicioniranje bolesnika spram operatera.

Mala područja krvarenja mogu smanjiti operativnu vidljivost, te time olakšati jatrogeno oštećenje okolnih struktura. Zato tehnika anestezije može dovesti do poboljšanja uvjeta za endoskopski zahvat sinusa.

Inducirana hipotenzija je spuštanje srednjeg arterijskog krvnog tlaka na između 60 i 65 mmHg u normotenzivnih bolesnika. Ukoliko nije kontraindicirana, to je najčešća tehnika anestezije u ovakvim vrstama operativnih zahvata, gdje se korištenjem niza farmakoloških sredstava tijekom opće anestezije smanjuje gubitak krvi, te olakšava vidljivost u operativnom polju. Ovom metodom smanjuje se hidrostatski tlak unutar kapilara, te se posljedično smanjuje količina kapilarnog krvarenja. Snižavanje krvnog tlaka, međutim nosi svoje rizike, uključujući trajno oštećenje mozga, odgođeno buđenje, tromboembolijske incidente, nedovoljan dotok krvi u mozak i smrt. Cilj ovoga rada je razložiti metode izvođenja inducirane hipotenzije u funkcionalnim endoskopskim operacijama sinusa. Pregled literature: Pregledali smo PubMed-ovu bazu podataka s informacijama o literaturi vezanoj uz tehniku opće anestezije koja se naziva inducirana hipotenzija s posebnim osvrtom na induciranu hipotenziju u funkcionalnim endoskopskim operacijama sinusa.

Ključne riječi: opća anestezija, inducirana hipotenzija, endoskopska operacija sinusa

Regionalna anestezija kod funkcionalnih endoskopskih operacija nosa - pregled literature

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Funkcionalne endoskopske operacije sinusa su minimalno invazivni operativni zahvati koji se ponajviše rade kod refraktornih kroničnih rinosinusitisa i kroničnih polipoznih rinosinusitisa. Manji zahvati mogu se vršiti u lokalnoj anesteziji, dok se opsežniji zahvati izvode u općoj anesteziji. Zahvati koji se vrše u općoj anesteziji dopuštaju operateru nepomično operacijsko polje, osiguran dišni put bolesnika, adekvatnu analgeziju i bolje pozicioniranje bolesnika spram operatera. Kada je bolesnik u općoj anesteziji, kao dopunske tehnike mogu se primjenjivati tehnike regionalne anestezije koje smanjuju potrošnju analgetika intraoperativno, kao i postoperativno, te samim time olakšavaju postoperativni oporavak bolesnika, kao i ranije otpuštanje iz bolnice.

Inervacija nosa i nosne šupljine je složena i uključuje i oftalmičku (V1) i maksilarnu (V2) granu trigeminalnog živca. Najčešće se izvode bilateralni blokovi živaca kod rinoplastika, uklanjanja polipa, fraktura nosa, te čak razderotina nosa. Naravno, u većini slučajeva endoskopske kirurgije nosa potrebna je već lokalna anestezija ili infiltracija od strane kirurga, kako bi se upotpunila analgezija i smanjilo krvarenje vazokonstrikcijom pomoću epinefrina, no međutim primjenom dopunske tehnike regionalne anestezije kojom se vrši blokada nazocilijarnog živca, vanjskog nosnog živca, infraorbitalnog živca, te pterigopalatinog ganglija, može se postići kompletna anestezija nosnog kavuma, septuma, te lateralnih stijenki. Ovo je efikasna dopunska metoda općoj anesteziji za koju nije potrebna UZV orijentacija, te su komplikacije rijetke i prolazne. Pregled literature: Pregledali smo PubMed-ovu bazu podataka s informacijama o literaturi vezanoj uz tehnike regionalne anestezije u funkcionalnim endoskopskim operacijama nosa.

Ključne riječi: regionalna anestezija, inducirana hipotenzija, endoskopska operacija sinusa

Obostrana atrezija hoana kod nedonoščeta

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Prema dosadašnjoj medicinskoj literaturi obostrana atrezija hoana je inkompatibilna sa životom i "zlatni standard" u rješavanju obostrane atrezije hoana kod novorođenčadi je hitna kirurška intervencija.

U radu se prikazuje slučaj nedonoščeta, 34 tjedna, porođajne težine 1,6 kg, kod kojega je po rođenju učinjena endotrahealna intubacija i postavljena orogastrična sonda. Učinjena je radiološka obrada, te je peti dan učinjena rekanalizacija hoana diodnim laserom.

Zaključak: Uz suvremena saznanja i suvremenu tehnologiju, obostrana atrezija hoana ne zahtijeva hitnu kiruršku intervenciju.

Ključne riječi: atrezija hoana, diodni laser

Endoskopska kirurgija prednje lubanjske jame: velika mukokela

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Prikaz slučaja: 72-godišnja bolesnica obrađivana je po neurologu zbog dugotrajnih glavobolja i dvoslika na lijevom oku. Radiološkom obradom dijagnosticira se tumorska tvorba veličine 7-8 cm koja destruiira lubanjsku osnovicu, širi se u prednju lubanjsku jamu, te komprimira lijevu orbitu i etmoidne stanice. Endoskopskim endonazalnim pristupom učinjena je prednja i stražnja etmoidektomija, te evakuiran obilan mukozan sekret.

Zaključak: Prvi postoperacijski dan bolesnica je subjektivno dobro, bez glavobolje i dvoslika, te je otpuštena na kućnu njegu.

Ključne riječi: lubanjska osnovica, endoskopija, mukokela

Balloon dilatation of the Eustachian tube: domain of an otologist or rhinologist?

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Background: Eustachian tube dysfunction is common in the general population, occurring in at least 1% of adults. Patients typically present with complaints of sensation of pressure or plugged ear, tinnitus, or hearing loss which can lead to an impaired quality of life. Eustachian tube balloon dilation is a novel surgical technique. The problem of treating Eustachian tube dysfunction with balloon dilatation is no clear consensus regarding patient selection and outcome assessment. Our case report aims to objectively measure the success of Eustachian tube balloon dilation by comparing pre and post-operative middle ear pressures using tympanometric testing.

Case report: A 27-year-old patient reported a feeling of fullness in his right ear that lasted for a year. He also complained of occasional tinnitus in the same ear. He had not had frequent ear infections until then. Audiological processing determined a normal hearing threshold on both sides at the level of 10 dB, type C curve in the right ear, and the test of tube function by swallowing on the right side showed dysfunction. After the treatment, balloon dilatation of the tube was performed on the right transnasal approach under a pressure of 6 daPa, six months postoperatively, the patient no longer complained, and there was a regular test of Eustachian tube function on both sides.

Conclusion: According to data from literature, balloon dilatation of the Eustachian tube showed success in 78% of patients. The transnasal approach to dilatation has proven to be a safe and effective method of treating chronic obstructive Eustachian tube dysfunction. A further consensus of patient selection and standardization of technique is required to optimize the effect of this therapy. The cooperation of otologists and rhinologists is needed in the diagnosis and treatment.

Keywords: Eustachian tube, Eustachian tube balloon dilation, balloon dilation, Eustachian tube dysfunction

Zastupljenost anosmije i ageuzije u COVID pozitivnih bolesnika u Kliničkom bolničkom centru Osijek

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Uvod: Brojni simptomi virusnih infekcija, poput kongestije nosa, povišene temperature, grlobolje i kašlja, uklapaju se i u kliničku sliku infekcije SARS-CoV-2 virusom, no osim navedenih poznati su i drugi karakteristični simptomi koji su često povezani s COVID-19 infekcijom. Smanjen ili potpuni gubitak osjeta njuha (anosmija) i okusa (ageuzija) prepoznati su kao jedni od glavnih simptoma COVID-19. Deficit je najčešće prolazan s povratom osjeta njuha i okusa kroz nekoliko dana ili tjedana. Pregledom literature u početku pandemije, prevalencija olfaktorne i gustatorne disfunkcije iznosila je oko 5% u Istočnoj Aziji, no dolaskom virusa u druge krajeve svijeta, prevalencija se penjala i do 60%.

Materijali i metode: Provedeno je presječno istraživanje bolesnika koji su bili pozitivni na SARS-CoV-2 virus PCR metodom. 54 COVID pozitivnih bolesnika ispunilo je upitnik u kojem su zabilježeni demografski podaci, simptomi COVID infekcije, komorbiditeti, olfaktorni i gustatorni status za vrijeme COVID infekcije i način liječenja. Svim bolesnicima učinjena je olfaktometrija (olfaktorni test *Smell Diskettes*, proizvođača *AG Medizintechnik*) u vrijeme PCR pozitiviteta, a rezultati su zabilježeni i statistički obrađeni.

Rezultati: U studiji je sudjelovalo 28 muškaraca i 26 žena. Srednja vrijednost (medijan) dobi ispitanika je 68 godina. 40,7% ispitanika nije imalo komorbiditeta. Najveći broj ispitanika imalo je više od jednog simptoma COVID infekcije, njih čak 48,1%. 24 ispitanika (44,44%) izgubilo je osjet njuha, dok je 20 ispitanika (37,04%) prijavilo gubitak osjeta okusa. Nije utvrđena statistički značajna korelacija između gubitka njuha i dobi, komorbiditeta i drugih simptoma. Značajno više žena je izgubilo njuh u odnosu na muškarce (Fisherov egzaktni test, $p=0,004$).

Zaključak: Anosmija i ageuzija česti su simptomi infekcije COVID-19 u bolesnika liječenih u KBC Osijek, što značajno narušava kvalitetu života bolesnika, a češće pogađa žene. Osim statistički značajnog većeg udjela anosmije i ageuzije kod žena, ne postoji statistička korelacija između gubitka njuha i okusa i dobi, komorbiditeta i drugih simptoma.

Ključne riječi: COVID-19, anosmija, ageuzija

Middle turbinate pneumatization in the paediatric population

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Objective: Bullous middle turbinate is a common anatomical variation in adults, however not much is known of its incidence and significance in children. Our aim was to determine the incidence of bullous middle turbinate in children and to assess whether it is associated with nasal septum deviation and some other anatomical variations such as pneumatization of superior turbinate, uncinata process, crista galli, sphenoid and frontal sinus.

Materials and methods: Paranasal sinus CT scans of 87 paediatric patients (mean age 5.6 years) were retrospectively reviewed. The presence of the concha bullosa, septal deviation and other anatomical variants were determined using tomography images. All data from patients were assessed by both an otolaryngologist and a radiologist. The patients were divided in two groups: group 1 were those with bullous middle turbinate and group 2 were those with normal middle turbinate.

Results: In the overall group, bullous middle turbinate was present in 29.5% of patients, bullous superior turbinate in 9.09%, deviated septum in 28.73%, pneumatized frontal sinus in 17.24%, pneumatized uncinata process in 3.4% and pneumatized crista galli in 26.4% of patients. The patients in group 1 were older (mean age 9.2 vs 3.9 years, $p < 0.001$), 50% had a deviated septum vs 19.67% in group 2 ($p = 0.04$). Bullous superior turbinate was present in 26.92% of patients in group 1 and 3.28% in group 2 ($p < 0.001$). In group 1, the conchal type of sphenoid pneumatization was present in 34.61%, presellar in 15.3%, sellar in 50%, vs 83.6%, 9.83%, and 6.5%, respectively ($p = 0.001$).

Conclusion: Our results showed that bullous middle turbinate is a frequent anatomical finding in older children and is associated with a deviated septum, bullous upper turbinate and sellar type of sphenoid pneumatization. This suggests that turbinate pneumatization is congenital and a continuing development process of the nose throughout childhood and adolescence, which is in concordance with some previous studies.

Keywords: turbinate pneumatization, septal deviation, computed tomography

Impact of COVID-19 and post-infectious course on the olfactory function: “Restitutio ad integrum” or permanent deficit?

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The experience of our center with patients who, after having overcome the SARS-CoV19 infection, manifested olfactory disorders includes 1952 patients who were evaluated, according to the protocol established in multidisciplinary agreement with internal medicine and infectious disease specialists, through ENT physical examination, questionnaires, olfactometry and gustometry (before and after treatment).

Our goal was to evaluate: the prevalence of smell and taste disorders in patients affected by SARS-CoV19, the resolution of the mentioned disorder based on the treatment protocols and eventually a possible correlation with patients not affected by the SARS-CoV19 infection. Our evaluation method included: Chemosensory Complaint Score, three VAS scales for olfactory and gustatory dysfunction and nasal obstruction symptoms, full ENT evaluation (rhinoscopy, oropharyngoscopy, evaluation of larynx and tympanic membranes). In the context of the DH PostCovid, an olfactory deficit was observed in 24.3% of cases; the questionnaire submitted to the patients during the acute phase of the infection tended to overestimate the incidence of the symptoms, but this data is likely related to the psychological impact of the disease itself during the early stages of the pandemic. In a period ranging from 2 to 9 months (M 5.5 months), we found a subjective and olfactometrically detected recovery of the olfactory function in almost all patients (98.6%); in only one case the recovery was obtained 13 months after the first evaluation. Among these patients, 65% of them regained the olfactory function during the first 3 months of therapy. Our therapy protocol consisted of: either topical use of glyceric acid plus mannitol for topical use in case of inflamed nasal mucosa or cross-linked ialuronic acid for topical use in case of atrophic rhinitis together with citicoline 1000mg per os and olfactory rehabilitation. Once having obtained these data, and keeping in mind that the therapy was personalized and modulated on the basis of the conditions found at the physical evaluation for each patient (presence or absence of significant nasal dryness, allergic rhinitis, etc.), and although the "unpredictability" of this pandemic imposes a certain caution on us, we can affirm that it is not frequent, in our series of cases, the persistence of the olfactory deficit in patients with previous SARS-CoV19 infection and that indeed the *restitutio ad integrum* is the most frequent of the eventualities.

Keywords: SARS-CoV19 infection, olfactory function, restitutio ad integrum

Multidisciplinary management of anemia behind epistaxis in HHT

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HHT affects one in 5000 people and occurs in all the ethnic groups and areas. It is also known as the Rendu-Osler-Weber disease and it is an inherited autosomal dominant genetic disorder, characterized by vascular abnormalities. Epistaxis, specifically recurrent and spontaneous nosebleeds, has been assessed as one of the most common, if not the most common clinical manifestation in HHT patients. The burden related to this manifestation has both psychological and physical consequences, especially since the treatment options follow a ladder that might bring to surgery and more invasive therapies. The EQ-VAS questionnaire allows us to adequately assess and classify HHT patients based on the intensity and type of epistaxis-related symptoms. This same questionnaire, which is submitted to patients during each evaluation for the benefit of anamnestic supplementation, includes both a question about the presence or absence of anemia and one about whether a red cell transfusion has been performed in the past months or since the last outpatient visit. As a matter of fact, chronic nosebleed, although mild to moderate, can lead to anemia within months or years and, in general, to a poor quality of life. Patients who have to undergo iron supplementation treatments often face the almost inevitable side effects that this therapy entails (diarrhea, constipation, nausea, persistent metallic taste, abdominal pain, etc.). Although numerous treatment options are available for patients with epistaxis phenotype, from topical to surgical, we believe, based on the successes achieved in the follow up of HHT patients at our center, that a multidisciplinary collaboration is essential to identify the patients who can benefit most from each treatment.

Keywords: epistaxis, HHT, genetic disorder

The subperichondrial /subperiosteal dissection in Preservation Rhinoplasty: How histology can help us to perform better surgeries

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Aim: The classical dissection plane in rhinoplasty is in the sub-SMAS plane with traumatic dissection of tissues and as a result significant and prolonged postoperative edema, especially in the external approach. A complete subperichondrial/periosteal route has been recently described. It seems to allow for simpler postoperative follow-up than external or closed approach performed in the sub-SMAS plane. However, little is known about the exact histological planes that are really dissected during surgery.

Material and methods: Histological examinations of 10 cadavers noses dissected in the so-called subperichondrial/subperiosteal plane were performed.

Results: The subperichondrial plane is truly subperichondrial and consists in a dissection under the chondrogenic layer of the perichondrium. Subperichondrial dissection necessitates sharp scrapping to separate the cartilage from the chondrogenic layer. The perichondrium is naturally thicker on the dorsum, which explains why it is easier to begin the dorsal dissection at the W point. Scroll cartilages are consistent and show between 9 and 13 isolated cartilages, most of the time, 1 major and several minors cartilages. Optimal strategy to ease the dissection is discussed

Conclusions: The subperichondrial/subperiosteal route, although necessitating significant dissection of the teguments of the nasal pyramid, is respectful of the anatomy of the nasal pyramid. It allows minimal traumatic maneuvers than in the sub-SMAS route, despite of the large dissection performed.

Keywords: preservation rhinoplasty, dissection, histology

The anterior cribriform plate foramina: from anatomy to surgery

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Background: Despite the development of anterior skull base surgery, the anatomy of the nasal bone and anterior cribriform plate remains unclear. A recent study confirmed 2 distinct foramina in the anterior part of the cribriform plate: the ethmoidal slit (ES) and the cribroethmoidal foramen (CF). The aim of this study was to specify their content, their anatomic relationship to the frontal sinus and skull base, and their potential value in skull base surgery.

Methods: Dissections were performed on 36 cadaver heads. Macro- and microscopic examinations were carried out. Microcomputed tomography scans contrasted with osmium were performed to identify vessels and nerves. Histology with neural, meningeal, or luteinizing hormone-releasing hormone immunomarkers was performed on the content of the foramina. Finally, endonasal surgical dissections were carried out.

Results: The ES and the CF were observed in all cases. They measured a mean of 4.2 and 1.6 mm, respectively. The ES contained dura mater, arachnoid tissues, lymphatics, and the terminal nerve. The CF contained the anterior ethmoidal nerve and artery. This foramen continued forward with the cribroethmoidal groove, which measured a mean of 2.5 mm. This groove was under the frontal sinus and in front of the skull base. We also described a "cribroethmoidal canal" and a "nasal bone foramen." Clinical applications are discussed.

Conclusion: The clinical applications of this new anatomic description concern both the cribriform plate and frontal sinus surgeries. Identifying the terminal nerve passing through the ES is a step forward in understanding pheromone recognition in humans.

Keywords: cribriform plate, anatomy, surgery

The interaction of IFN- γ , IL-4 and IL-5 with the inflammation severity, predisposing factors and phenotype in chronic rhinosinusitis

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Introduction: Chronic rhinosinusitis (CRS) is a complex clinical syndrome, where the interaction of different predisposing factors has an impact on symptoms and pattern of inflammation.

Aim: The aim of the study was to show the regulation of different cytokines (IFN- γ , IL-4 and IL-5) related to CRS phenotypes and comorbidities.

Methods: The study included 50 patients with CRS according to EPOS criteria. Sinus and polyp samples were collected at sinus surgery: 29 from non-allergic CRS without nasal polyps (CRSsNP), 9 from allergic non-asthmatic CRSsNP, 17 from allergic asthma, 11 from non-allergic asthma, 5 from aspirin intolerant CRS with nasal polyps (CRSwNP). The tissue homogenates were prepared immediately on ice and incubated with protease inhibitor. Assays (R&D System, Quantikine ELISA, UK) for interleukins IL-4, IL-5 and for interferon gamma (IFN- γ) employed the quantitative sandwich enzyme immunoassay technique, CT scans were scored with the Lund-Mackay scoring system. The Kruskal-Valis test was performed to compare values of tissue homogenate concentrations of cytokines between groups.

Results: The study included 50 CRS (30 males) patients mean age of 43.2 years; 32 with CRSsNP and 18 with CRSwNP. IL-4 was not significantly different between the groups. IL-5 was significantly higher in allergic asthma than in both CRSsNP and in non-allergic asthma than in CRSsNP with allergic sensitization. Unexpectedly, IFN- γ was significantly higher in CRSsNP with allergic sensitization than in other groups. IL-5 was the only cytokine that correlated with the CT score. IL-4 correlated significantly with both IL-5 and IFN- γ .

Conclusion: The data confirmed significantly higher IL-5 concentrations in asthmatic patients which are mainly CRSwNP, and in CRSwNP versus CRSsNP in general. IFN- γ concentrations in CRSsNP with allergic sensitization are significantly higher than in any other subgroup. Up-regulation of IL-4 in ASA intolerant subgroup suggested greater involvement of IL-4 in the pathogenesis of CRS in ASA intolerant patients than in other subgroups.

Keywords: chronic rhinosinusitis, interleukin 4, interleukin 5, interferon gamma

Endoskopska endonazalna transsfenoidna kirurgija kraniofaringeoma: 12 godina iskustva u Kliničkom bolničkom centru Zagreb

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Uvod: Kraniofaringeomi su rijetki benigni tumori supraselarne regije mozga. Njihova pojavnost slijedi bimodalnu distribuciju – drugim riječima, pojavljuju se, ili u dječjoj, ili u kasnoj odrasloj dobi. Uslijed učinka mase i lokalne destrukcije neuralnih struktura uzrokuju poremećaje vida, endokrinološke smetnje, poremećaje kognicije itd. Liječenje je kirurško, s ciljem potpunog uklanjanja, a tradicionalni pristup je transkranijjski. Poslijeoperacijske rezidue liječe se radiokirurški. Endoskopska kirurgija u sve je široj primjeni, kroz čitav spektar neurokirurških indikacija, koji uključuje i operacijsko liječenje kraniofaringeoma kroz endonazalni transsfenoidalni prošireni pristup. Spomenuti pristup koristi prirodni koridor, omogućuje široki i sveobuhvatni prikaz supraselarne regije i pruža rezultate liječenja koji su superiorniji tradicionalnim transkranijjskim alternativama.

Cilj: S jedne strane, raspraviti indikacije, relevantnu anatomiju, prednosti i ograničenja proširenog endonazalnog endoskopskog pristupa u liječenju patologije selarne, supraselarne i paraselarne regije, a s druge prikazati naša iskustva kroz opis serije odraslih bolesnika s kraniofaringeomima liječenih na Klinici za neurokirurgiju Kliničkog bolničkog centra Zagreb.

Metode: Sustavni pregled literature, kako bi identificirali sva objavljena izvješća o serijama slučajeva kraniofaringeoma operiranih endonazalnim endoskopskim putem. Institucionalni pregled slučajeva liječenih endonazalnom endoskopskom, kao i tradicionalnom metodom u Kliničkom bolničkom centru Zagreb i usporedba ishoda između obje metode.

Rezultati: Kroz pregled literature identificirali smo desetak objavljenih izvješća (serije slučajeva), čiji rezultati govore o učinkovitosti endonazalnog endoskopskog pristupa u liječenju kraniofaringeoma, iako uz stopu komplikacija višu nego kod tradicionalnog transkranijjskog pristupa. U razdoblju od interesa na Klinici za neurokirurgiju KBC-a Zagreb operirano je 50 odraslih bolesnika s kraniofaringeomima, od čega 20 endonazalnim endoskopskim pristupom. Kod potonjih je postignuta viša stopa uklanjanja tumora, usporedivi ishodi u smislu funkcije vida i endokrinološke funkcije, ali i viša stopa curenja cerebrospinalne tekućine i disrupcije postoperativne rane.

Zaključak: Endoskopski endonazalna kirurgija sigurna je i učinkovita metoda liječenja kraniofaringeoma.

Ključne riječi: kraniofaringeom, supraselarna regija, rezidua

Chronic rhinosinusitis with nasal polyps and type 2 inflammation

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Current treatment paradigm in chronic rhinosinusitis with nasal polyps (CRSwNP) recommends nasal steroids and saline nasal rinses for milder cases, and oral corticosteroids and eventual surgery for severe cases. The most common endotype of CRSwNP is type 2 inflammation. As a result of the common inflammatory pathway type 2, CRSwNP is often associated with asthma and/or salicylate sensitivity. Classification of chronic rhinosinusitis into different endotypes leads to more precise treatment strategies. Classification endotypes to type 2 or non-type 2 in the future will probably be further developed for treatment purposes. Biologic therapy focused on the pathophysiology of the underlying inflammatory disease type 2 has led to a significant shift in the treatment options for CRSwNP, primarily for the most severe cases, refractory to standard treatment. Our experience proved biologics effective in patients with CRSwNP to whom biologics were prescribed because of severe asthma.

Keywords: chronic rhinosinusitis with nasal polyps, management of nasal polyps, sinus disease, type 2 inflammation

Olfactory disorders during SARS-CoV-2 infection

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At the end of 2019 in Wuhan, China, a novel coronavirus, Severe Acute Respiratory Syndrome Corona virus 2 (SARS-CoV-2), was considered as the cause of some lower respiratory tract infections. On February 11th 2020, the new disease caused by the SARS-CoV-2 virus was officially termed “COVID-19” by the WHO. Transmission from person to person occurs mainly by direct contact or droplets spread by coughing or sneezing by an infected individual with SARS-CoV-2. The most common symptoms are fever, cough, fatigue, headache, and dyspnea. In the most severe cases, patients may develop pneumonia, acute respiratory failure, distress syndrome, and acute heart problems. The most common ENT symptoms are cough, anosmia/hyposmia, sore throat, ageusia, nasal congestion, runny nose, postnasal discharge, hoarseness, otalgia, tinnitus, gingivitis, Bell’s palsy, and sudden hearing loss. Literature data showed that olfactory disorders were found in 35% to 84.6% of patients. From March to November 2021, in Zadar General Hospital 2582 patients were hospitalized with SARS-CoV-2 virus infection. Anosmia/hyposmia was found in 1110 (43%) patients. In most patients with olfactory disturbances after fourteen days, the epithelium showed signs of recovery, but it had not yet returned to normal. The infection made desquamation of the olfactory epithelium and the preference for the virus for sustentacular cells rather than neuronal cells and the intense recruitment of immune cells. Damage to sustentacular cells and Bowman cells directly affects the perception of odors, not by the transmission of the virus to olfactory receptor neurons but by impairing some of its functions that are necessary for the functional metabolism of these neurons. Damage to Bowman cells would cause an interruption in the production of nasal mucus, necessary for the dissolution of odorous particles.

Keywords: SARS-CoV-2 infection, olfaction disorders, smell

Nasopharyngeal presentation of second branchial cleft cyst: diagnosis and surgical management – case report of 29-year-old female patient- POSTER presentation

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Branchial cleft fistulae are rare congenital abnormalities that arise from the abnormal persistence of branchial apparatus remnants. A complete fistula is a tract that has an internal opening and an external opening. Second branchial cleft fistulae pass deep to second arch structures and over third arch structures, in a direction extending from the anterior border of the sternocleidomastoid (SCM) muscle to the upper pole of the ipsilateral tonsil fossa. Because of this anatomical route, these long tubular structures are intimately associated with major neuro-vascular structures in the neck. Fistulae are usually clinically apparent after birth with up to 80% being diagnosed before the age of 5 years. There may be an obvious opening in the anterior neck between the hyoid bone and suprasternal notch. Treatment is complete surgical excision and extirpation in toto of all abnormally placed epithelium, while preserving surrounding neurovascular structures and using cosmetically acceptable incisions. Complete fistulae in adults are rare and diagnosis can be difficult. Second branchial cleft cysts are the most common neck masses found in adults. However, the parapharyngeal or pharyngeal presence of branchial cleft cyst is very rare. It occurs as cervical sinus that temporarily appears in the process of branchial apparatus developing into various structures of the neck, and is not closed but remains to exist. However, there is a very rare case where second branchial cleft cyst appears in the form of cystic mass that is located in the parapharyngeal or pharyngeal space. A rare location in the pharyngeal presence has been shown in only three cases in the world. We report one case of nasopharyngeal branchial cleft cyst in adults. We present the clinical presentation and surgical management of a sized cystic structure (40x25x9 mm), second branchial cleft cyst, pharyngeal presentation located from the epipharyngeal space to the hyoid bone in a 29-year-old female patient with main complaints of a swelling sensation of the pharynx, dysphagia and throat pain that had continued 2 days before otorhinolaringologist-examining.

Preoperative CT scans of the neck clearly demonstrated the cyst. Biopsy revealed a squamous lined epithelial wall with lymphoid aggregation, which is characteristic of the branchial cleft cyst. We recommend intra-oral surgery to allow safe and complete extirpation per via naturale. The author completely removed the cyst in intraoral approach for cystic mass in the pharyngeal space. We performed a transoral resection without any surgical complications - one day surgery. The excision of the cyst was performed in incision (extirpation) of left oropharyngeal membrane under general anesthesia.

Keywords: branchial region, cysts, oropharynx, congenital neck masses

Nazolikvoreja kao posljedica uzimanja nazofaringealnog brisa na COVID 19 - prikaz slučaja

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Cilj: Prikazati slučaj nazolikvoreje kao komplikacije uzimanja obriska nazofarinksa na COVID-19. Nazolikvoreja je istjecanje likvora iz likvorskih prostora u nosnu šupljinu ili paranasalne sinuse zbog urođenih ili stečenih abnormalnosti kostiju baze lubanje i moždanih ovojnica različite etiologije. Najčešće je u podlozi trauma razne etiologije.

Prikaz slučaja: U radu smo prikazali slučaj nazolikvoreje kod 63-godišnje bolesnice koja se javila u ORL ambulantu zbog jednostrane bistre sekrecije, slanog okusa iz nosa, koja se pojačava pri saginjanju glave unaprijed. Tegobe su počele 3 mjeseca prije javljanja u ambulantu. Retrogradno doznajemo da je bila na brisu nosa zbog COVID-a-19 i da ju je tom prilikom jako zaboljelo i zapeklo u nosu. Uz sekreciju bili su izraženi simptomi vrtoglavice, glavobolje lokalizirane između očiju, zamućenje vida i osjećaj slabosti. Povišene temperature nije imala. Laboratorijskom analizom sekreta iz nosa utvrđena je prisutnost sijalotransferina. MR mozga pronađena je fistula u području olfaktornog recessusa ispod kribriiformne ploče, čime je potvrđena dijagnoza. Bolesnici je sekrecija spontano prestala nakon nekoliko mjeseci, zbog čega je predložena opservacija, te za sada nije bilo potrebe za kirurškim liječenjem.

Rasprava: Najčešća komplikacija uzimanja nazofariningelnih briseva, osim bola je epistaksa koja uglavnom ne zahtjeva medicinsku intervenciju. Strano tijelo (vrh štapića), abscess septum ili perforacija lamine papiraceje moguće su komplikacije. Nazolikvoreja s posljedničnim meningitisom češća je kod osoba na kojima je obavljena neka od rinoloških operacija.

Zaključci: Za osobe koje uzimaju uzorke nužna je edukacija o osnovama anatomije nosa, i načinu uzimanja brisa. Iako postoji određeni postotak jatrogenih komplikacija, nazofaringealni bris je i dalje zlatni standard za postavljanje dijagnoze na COVID-19.

Ključne riječi: COVID-19 bris, komplikacije, nazolikvoreja

Quality of life after FESS combined with diode laser in patients with chronic rhinosinusitis with nasal polyposis

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Introduction: Chronic rhinosinusitis with nasal polyposis (CRSwNP) is one of the most severe forms of chronic rhinosinusitis. The Sino-Nasal-Outcome Test 22 (SNOT-22) is most commonly used to assess the quality of life of these patients. One of the new treatment options for patients with CRSwNP is endoscopic diode laser polypectomy (DLPE) in local anesthesia. This study aims to compare the quality of life of patients with CRSwNP who underwent FESS and those who underwent DLPE before and after surgery.

Patients and Methods: The study included a total of 59 patients with CRSwNP who had undergone FESS or DLPE under local anesthesia. The quality of life before and after surgery was examined using SNOT-22.

Results: A total of 59 patients were included in the study, with a greater predominance of men than women (37:22). Endoscopic DLPE was performed in 25 (42.4%) of patients. The overall SNOT-22 score was a significantly lower one and three months postoperatively in both groups of patients ($p < 0.001$). There was no significant difference in the overall SNOT-22 score three months postoperatively between patients who had undergone FESS and those who had undergone DLPE.

Conclusions: Endoscopic DLPE shows the same success in improving the quality of life as FESS and can be performed under local anesthesia, which it is ideal for people with multiple comorbidities.

Keywords: chronic rhinosinusitis with nasal polyposis, nasal polyps, diode laser, SNOT-22

Opsežna mukocela čeonog sinusa – prikaz slučaja

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Mukocele su dobroćudne cistične tvorbe obložene epitelom, ispunjene tekućim sadržajem i smještene u paranazalnim sinusima. One svojim rastom mogu ispuniti cijeli sinus i obzirom na daljni rast mogu koštanom pregradnjom dovesti do razaranja koštanoga zida sinusa, a time i orbite. U literaturi se navode raznoliki čimbenici nastanka i rasta cisti (alergije, kronična upala sluznice sinusa, anatomske abnormalnosti, prethodne ozljede kostiju lica i prethodni kirurški zahvati na sinusima). U većini slučajeva uzrok pojave mukocela je nepoznat, ali u ovom prikazu slučaja radi se o postraumatskoj i postoperativnoj mukoceli čeonog sinusa. U ovom prikazu riječ je o 51-godišnjem muškarcu koji je hospitaliziran nakon pregleda u hitnoj ambulanti zbog izrazite protproze desne očne jabučice. Bolesnik je primijetio izbočenje desnoga oka, popraćeno crvenilom i bolovima deset dana prije odlaska liječniku. Prije 22 godine imao je prometnu nezgodu kojom prilikom je zadobio višestruke prijelome lubanje i gornje i donje čeljusti, zbog čega je kirurški liječen. Učinjena kompjuterizirana tomografija pokazuje proptoza desnog bulbusa, te oba čeona sinusa ispunjena masama koje destruiraju krov obje orbite i protrudiraju intraorbitalno, uz desnostrani značajniji kompresivni učinak na bulbus koji je potisnut prema dolje i van. Koronarnim pristupom prikaže se obostrani koštani defekt krova orbita, te se pristupi frontalnim sinusu koji je ispunjen tekućim gustim sadržajem koji izlazi pod tlakom. Odstrani se nekrotična kost i patološka sluznica sinusa. Periumbilikalnim masnim tkivom se u potpunosti obliterira frontalni sinus, te se postavi titanska mrežasta pločica. U postoperativnom praćenju bolesnik je bez subjektivnih tegoba. Iako se danas obliteracija frontalnog sinusa masnim tkivom rijetko koristi, u rijetkim slučajevima ima važnu ulogu za liječenje.

Ključne riječi: čeona mukocela, ozljeda, proptoza, razaranje kosti, infekcija, frontalna osteoplastika

Orbital cellulitis as a first sign of ethmoid sinus osteoma in children – case report and short literature review

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Introduction: Orbital cellulitis is a rare condition with very dangerous complication of acute sinus infection that could potentially lead to vision loss. It is the most common complication of acute sinusitis, especially in children. On the other hand, osteoma of paranasal sinuses in pediatric patients causing orbital cellulitis is a very rare phenomenon.

Case report: A 13-year-old male child was presented to our Clinic with severe frontal headache, large swelling of the upper right eyelid, proptosis, chemosis and impaired vision of the affected eye. Fiberendoscopy showed purulent discharge from both nasal cavums and mucosal inflammation which caused the narrowing of the right ostiomeatal complex as well as sphenoetmoidal recess. Computer tomography of the paranasal sinuses revealed a subperiosteal abscess localized on the superolateral orbital wall with opacified right frontal sinus and huge ethmoid sinus osteoma measuring 2.5x2x1 cm. The tumour was removed endoscopically and great care was taken not to pierce the skull base and simultaneously remove all parts of the tumour. In addition, an outer incision of 1 cm of the upper eyelid was performed. The patient's symptoms decreased postoperatively, and the patient was released from the Clinic with significant improvement on the sixth postoperative day.

Discussion: We present an extremely rare case of ethmoidal osteoma which caused orbital cellulitis in a pediatric patient. Treating such patients is very sensitive and established algorithms do not exist. We examined the available literature on the aforementioned topic. According to Chandler's classification of orbital cellulitis, the treating of grade III or subperiosteal abscess is still a controversy. However, in our patient's case, the cause of cellulitis was large osteoma, so surgical intervention was inevitable. An endoscopic approach gives excellent results, but maximal care must be taken in order to avoid damaging the surrounding important structures, especially in pediatric patients who have narrow nasal cavities.

Keywords: orbital cellulitis, ethmoid sinus osteoma, pediatrics

The challenging Silent sinus syndrome

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The Silent sinus syndrome (SSS), first described in 1964 by Montgomery, is considered a relatively rare pathological entity, but it is presumably underdiagnosed and underreported. Terms such as imploding antrum and chronic maxillary atelectasis (CMA) have interchangeably been used to describe this syndrome, even though CMA has been postulated to represent either a different entity or a stage of evolution of the same disease. Bilateral involvement has been documented in a limited number of cases. Silent ethmoid sinus and silent frontal sinus syndromes have been described. The prevalent initial presentation is facial asymmetry with progressive “silent” painless unilateral enophthalmos and hypoglobus, and rarely diplopia. Isolated maxillary sinus hypoplasia must be differentiated. The etiopathogenesis is poorly understood and still under debate. According to the diagnostic criteria, SSS should spontaneously develop in absence of previous trauma or surgery. Secondary SSS to trauma or surgery, or to other causes like inflammation or tumor, has been documented in literature. The diagnosis relies on the CT, which typically shows unilateral hypoplastic and opacified maxillary sinus with inward bowing and remodeling of the sinus walls and inferior displacement of the orbital floor, an enlarged retroantral fat pad, a lateralized uncinat process, and a blocked ostiomeatal complex. The treatment of SSS aims at restoring the eye position and orbital floor height, to prevent progression of enophthalmos, to restore ventilation and drainage of the sinus. These objectives are achieved in single or two-stage surgery. The timing for management of the orbital floor is still under debate. The universally accepted treatment is surgical and usually accomplished by endoscopic sinus surgery. Associated middle turbinate hypertrophy and septal deviation must be previously addressed. Precise and gentle endoscopic removal of the obstruction of the ethmoid infundibulum, simply performing an inferior posteroanterior uncinectomy, since the uncinat process has constantly been found atelectatic and adherent to the lateral nasal wall, can reestablish the patency of the natural maxillary ostium. In our experience, following middle meatal antrostomy, long-term observation with staged orbital surgery, if required, is recommended. In this study, we present our cases with a focus on surgical stratagems developed in order to reduce the risk of injuring the orbit and to achieve long-lasting results.

Keywords: Silent sinus syndrome, hypoplastic sinus, orbi

Nasal tip sutures: how to control shape and orientation in rhinoplasty

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Nasal tip surgery is universally recognized as the most challenging part of the rhinoplasty procedure. "The tip makes the nose". Narrowing the anatomically complex alar cartilages can lead to functional and aesthetic unfavourable outcomes. A thorough understanding of the ideal surface aesthetics and contours and spatial relationships of the structures of the nose tip is mandatory. In primary rhinoplasty, a very large percentage of visible tip deformities involve two major areas: the domes and the lateral crura. Suture techniques have the potential to modify the position, shape and definition of the tip. However, even sutures may result in changes beyond the main goals for which they are placed. The final suture effects are influenced by factors such as forces intrinsic to the cartilages, the degree of suture tightening, and limitations posed by the soft-tissue attachments. The closed delivery approach is our favourite. In a step-by-step fashion, first the medial pillar of the tripod should be addressed, establishing stable and strong tip support and basic dome projection symmetry. Subsequently and in our experience, in a standard procedure shaping lateral crura and domes, using reversible techniques that preserve structural integrity of the rimstrip, would be advisable. One of the main goals is not only to narrow the tip but to change the angle of rotation of the lateral crus surface in relation to the sagittal upper septal margin. Once marked the new dome defining point, with a variable combination of the lateral crural steal technique, sutures such as cranial tip sutures (CTS) and hemitransdomal sutures (HTS) might produce the needed outcome of everting and rotating the caudal margin of the lateral crura above the cranial edge. These sutures can gradually increase domal convexity and reduce lateral crura convexity. Additional dome equalization suture can guarantee more symmetry and then one or more lateral crural spanning sutures help in achieving supplementary eversion of the lateral crus. After establishing adequate projection, the tip rotation or position sutures are placed between the cranial edge of intermediate crura and the dorsal septum. The personal association of suture techniques is presented in this study and the long-term subjective and objective results are discussed along with the pros and cons.

Keywords: nasal tip, surgery, suture

Pedicled flaps in endoscopic surgery: the right choice for the right situation

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Since the description of the nasoseptal flap by Hadad et al. in 2006, many local or locoregional flaps have been described in transnasal endoscopic surgery. The aim of this lecture is to describe the main flaps available to a rhinologist surgeon, and to summarize the main therapeutic indications: covering of the duraplasty in case of dural opening, maintaining the patency of the drainage pathway for frontal or sphenoid sinus surgery, or covering “at-risk” structures in salvage surgery after radiotherapy.

Keywords: nasoseptal flap, duraplasty, sinus surgery

New endoscopic approaches of the maxillary sinus

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Common surgical approaches to the maxillary sinus include the Calwell-Luc procedure, the middle meatal antrostomy, and the inferior meatal antrostomy. Endoscopic medial maxillectomy was added to these possibilities in the late 1990s and is now widely used. The aim of this presentation is to focus on two variations of the medial maxillectomy, namely the prelacrimal approach and the Sturman-Canfield procedure, and to describe the surgical technique, the potential indications, and their respective advantages and drawbacks.

Keywords: maxillary sinus, endoscopic approach, surgery

Pregled rada rinološke ambulante tijekom COVID-19 pandemije u Općoj bolnici Zadar

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Uvod: Nakon pojave novog korona virusa SARS-Cov-2, 2019. godine u Kini, u veljači 2020. godine SZO je proglasila pandemiju COVID-a-19. Cilj rada je usporediti rad rinološke ambulante prije pojave pandemije s radom te ambulante tijekom pandemije.

Bolesnici i metode: Uspoređeni su elektronski podaci bolesnika pregledanih u rinološkoj ambulanti tijekom razdoblja od 11.03.2018. do 11.12.2019. godine s podacima o radu ambulante tijekom razdoblja pandemije od 11.03.2020. do 11.12.2021. godine. Dobiveni rezultati obrađeni su u programu Statistica 13.3 χ^2 testom, na razini značajnosti 0,05.

Rezultat: Ukupno su analizirani podaci 7376 bolesnika – 4837 bolesnika prije pandemije i 2539 bolesnika tijekom pandemije. Broj pregleda tijekom izbijanja COVID-19 pandemije značajno je smanjen, gotovo na pola (66% vrs 34%). Razlozi posjete rinoloških bolesnika ambulanti ostali su isti. Alergijski rinitis je i dalje najčešći razlog dolaska bolesnika na pregled. Značajno je smanjen broj ambulantnih pregleda povezanih sa svim najčešćim rinološkim dijagnozama: akutnim nazofaringitisom ($p>0,05$), akutnim sinuitisom ($p<0,05$), alergijskim rinitisom ($p<0,05$), kroničnim sinuitisom ($p<0,05$), nosnom polipozom ($p>0,05$), deformacijom nosnog septuma ($p<0,05$) i epistaksom ($p<0,05$).

Zaključak: Tijekom ispitivanog razdoblja došlo je do znatnog pada broja pregleda ambulantnih rinoloških bolesnika. Više je uzroka ovom smanjenju, prvenstveno strah bolesnika od pandemije, ali i otežani rad zdravstvenoga sustava.

Ključne riječi: COVID-19, rinologija, pregled

Primarni sinonazalni karcinom s gubitkom SMARCB1 (INI-1) – prikaz slučaja

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Maligni sinonazalni karcinomi rijedak su entitet s godišnjom incidencijom od 0,5 na 100.000 osoba. Histološki su vrlo raznoliki, što predstavlja veliki izazov u njihovoj dijagnostici. Prema klasifikaciji SZO dijele se na epitelne, neuroektodermalne i mezenhimalne tumore. Na osnovi novih imunohistokemijskih markera i genetike opisani su novi dijagnostički entiteti koji su uključeni u novu klasifikaciju SZO, a među njima je i SMARCB1(INI-1) deficijentni sinonazalni karcinom koji je varijanta sinonazalnog nediferenciranog karcinoma (SNUC). Radi se o slabo diferenciranom karcinomu, karakteriziranom potpunim gubitkom imunoekspresije SMARCB1(INI-1) kao posljedica inaktivacije gena SMARCB1, poznatog tumorskog supresora. Imaju dosta agresivan tijek, prikazuju se kao progresivno rastuće, lokalno infiltrativne i destruktivne sinonazalne mase. Do danas je u literaturi zabilježeno manje od stotinu slučajeva ovoga karcinoma s prvim opisanim slučajem 2014. godine.

U ovom radu predstavljamo slučaj primarnog sinonazalnog karcinoma s gubitkom SMARCB1(INI-1) kod 39-godišnje bolesnice obrađivane radi glavobolje i dvoslika. Učinjenom radiološkom obradom (CT i NMR) prikazuje se proces sfenoida koji infiltrira veliko krilo sfenoida s lijeve strane, klivus i selarnu regiju. Biopsijom je postavljena dijagnoza slabo diferenciranog karcinoma, s gubitkom ekspresije SMARCB1 (INI-1). Obzirom na lokaciju tumora i zahvaćenost struktura, kod bolesnice je učinjena endoskopska redukcija tumora, te postoperativna kemoradioterapija. S obzirom na to da se većina bolesnika javlja u uznapredovaloj fazi bolesti, prognoza im je loša.

Ključne riječi: primarni sinonazalni karcinom, SMARCB1(INI-1) deficijentni sinonazalni karcinom

Spontana rinolikvoreja – prikaz slučaja

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Rinolikvoreja nastaje kao rezultat neprirodne komunikacije između subarahnoidalnog prostora i pneumatiziranog mjesta u bazi lubanje koje uključuje paranazalne sinuse ili nosne kavume. Prema etiologiji možemo ju podijeliti na traumatsku i netraumatsku komunikaciju ili fistulu. Traumatske fistule dijelimo na akcidentalne ili slučajne (one čine većinu – oko 80% svih fistula) i na ijtrogene ili poslijeoperacijske (oko 15%). Netraumatske ili spontane fistule uzrok su rinolikvoreje u otprilike 5% svih slučajeva. Spontane fistule možemo podijeliti na one uzrokovane idiopatskom intrakranijalnom hipertenzijom i na fistule s normalnim intrakranijalnim tlakom. Potencijalne komplikacije rinolikvoreje su meningitis, moždani apsces, pneumocefalus, te je zato važno što ranije započeti kirurško liječenje. Izlaganje prikazuje tri najrecentnija slučaja spontane rinolikvoreje na našoj klinici, koje smo odlučili liječiti transnazalnim endoskopskim pristupom, koristeći višeslojnu kompozitnu tehniku zatvaranja fistule. Kod sva tri slučaja (jedan muški bolesnik i dvije ženske bolesnice) radiološkom slikovnom dijagnostikom verificiran je defekt desne *lamina cribiformis*. Poslijeoperacijski muški bolesnik zahtijevao je sekundarno kirurško liječenje unutar mjesec dana od primarnog operacijskog zahvata, zbog recidiva rinolikvoreje. Godinu i pol dana od završenog kirurškog liječenja na kontrolnom pregledu sva tri bolesnika urednog su lokalnog nalaza i subjektivno bez tegoba. Smatramo da je uzrok recidiva rinolikvoreje kod muškog bolesnika rezultat korištenja tehnike zatvaranja koja nije imala jednako složenu višeslojnu kompozitnu građu koju smo koristili u kirurškom liječenju bolesnica. Spontana rinolikvoreja rijetko je patološko stanje koje zahtijeva brzu dijagnostiku i kirurško liječenje zbog mogućih opasnih komplikacija. Pravilno uzimanje anamneze, multidisciplinarni pristup, precizna prijeoperacijska radiološka lokalizacija i izbor kirurške tehnike bitni su za uspješno liječenje. Transnazalni endoskopski pristup s višeslojnom kompozitnom tehnikom zatvaranja ima visoku stopu uspješnosti s vrlo visokom sigurnošću i vrlo niskom stopom morbiditeta, kako u recentnoj literaturi, tako i u našem iskustvu.

Ključne riječi: rinolikvoreja, traumatska fistula, recidiv

Nasal polyposis in Cystic Fibrosis: experience from CF Center, UHC Zagreb

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Cystic fibrosis (CF) is a lethal autosomal recessive disease, caused by mutations in the CF transmembrane conductance regulator gene (CFTR). CFTR mutations affect epithelial cells in the lungs, sinuses, pancreas, liver, kidneys, intestine and sweat glands, causing abnormally viscous mucus production, thickening of digestive fluids and salty sweat. The consequences for the respiratory system are mucus build-up, decreased mucociliary clearance and tissue inflammation. A change in microbioma follows, with *S. aureus* and *P. aeruginosa* being prevalent in most patients, as they have the capacity of biofilm formation causing chronic colonization. This represents the basis for recurrent infection. At the same time, pancreatic insufficiency leads to malabsorption of fat-soluble vitamins, i.g. vitamin D3, a powerful immunomodulator implicated in both pulmonary and sinus pathophysiology. CF is marked by a high incidence of nasal polyposis, even in the pediatric population and ENT follow-up is mandatory. CF nasal polyposis is a distinctive form of nasal polyposis and its treatment and follow up present many challenges.

CF affects one out of every 3000 newborns. The total number of patients with CF in Croatia is 175, and the majority of them now refer to our CF Center of Zagreb University Center where they are approached by a multidisciplinary team: both pediatric and adult pulmologists, gastroenterologists, endocrinologists, rhinologists, microbiologists and nutritionists. We aimed to review our experience with CF patients from a rhinologist point of view and present the prevalence and specifics of nasal polyposis in cystic fibrosis patients from our CF Center.

Key words: nasal polyposis, cystic fibrosis, sinus surgery, vitamin D3 deficiency