ISSN 2737-971X
eISSN 2737-9752

KNJIGA SAŽETAKA

Nacionalni kongres sa međunarodnim učešćem

INFEKCIJE - IZAZOVI U DIJAGNOSTICI I LEČENjU

BOOK OF ABSTRACTS

National congress with international participation

INFECTIONS – CHALLENGES IN DIAGNOSIS AND MANAGEMENT

SERBIAN JOURNAL OF THE MEDICAL CHAMBER

SRPSKI MEDICINSKI ČASOPIS LEKARSKE KOMORE

VOLUMEN 4 • DODATAK I • MART 2023.
VOLUME 4 • SUPPLEMENT I • MARCH 2023

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PRINTED BY: DONAT GRAF, Belgrade

CIRCULATION: 1,000 copies
The Journal is published quarterly

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Hotel Zira, Beograd
07. i 08. april 2023. godine

EDITORIJAL

April u Beogradu Lekarska Komora počinje održavanjem Nacionalnog kongresa sa međunarodnim učešćem "Infekcije-izazovi u dijagnostici i terapiji".

Infekcije su svakodnevni izazov u radu svim lekarima na planeti.One su ozbiljan uzrok morbiditeta i mortaliteta od početka ljudske civilizacije. Pored navedenog, najskorija istraživanja tokom COVID-19 pandemije su pokazala uticaj infekcija na sociološke i psihološke parametre. Mere prevencije,mehanizmi odbrane, farmakološka terapija, imunizacija su neki od načina za pobedu infekcija. Svaki organ u organizmu može biti lokalizacija infekcije, a shodno tome je drugačija klinička slika, dijagnostika, terapija i psihofizička rehabilitacija. Dokazano je da pojedini infektivni agensi pokazuju povezanost sa nastankom malignih bolesti

U ovom suplementu Srpskog medicinskog časopisa Lekarske komore objavljujemo veoma širok dijapazon aktuelnih znanja vezanih za prevenciju, etiologiju, patologiju, dijagnostiku, lečenje i psihofizičku rehabilitaciju vezanih za infekcije.

Organizacioni i naučni odbor kongresa sa istaknutim predavačima i predsedavajućim sesijama prezentuje najnovija saznanja vezana za specifičnosti uzročnika infekcija i specifičnosti dela morfološkog, homeostatskog mehanizma organizma koji je oboleo. Eminentni strani predavači dele svoja aktuelna saznanja povezana sa infekcijama. Sažeci su prošli recenziju od strane Naučnog odbora kongresa. Kongresna predavanja i ovaj časopis su konciprani kao spona nauke i prakse.

Posebno srdačnu dobrodošlicu na Kongresu i u časopisu želimo mladim lekarima. Kongres i objavljene aktuelnosti vezane za infekcije su jedan od načina da mlađe kolege podstaknemo činjenicom da je učestvovanje na kongresima i publikovanje radova jedan od važnih načina unapređivanja znanja. Savremena multidisciplinarna saznanja vezana za infekcije koje nam prezentuju eksperti, imaju zadatak da mlađim kolegama šire horizonte lekarske dužnosti bez granica. U tom smislu bitno se ističe prednost timske saradnje svih specijalizacija lekarske struke i poželjnost razmene znanja i iskustva više medicinskih ustanova. Iz ovoga proizilazi prezentacija, posebno našim mladim kolegama, najvažnije činjenice da su učenje i timski rad direktan način uticaja na zdravlje opšte populacije i uticaja na budućnost medicine globalno.

Između redova ovog suplementa stoji velika želja da dok čitamo ovaj suplement i dok učimo kroz naučni program kongresa, nađemo vreme za druženja i planiranja timskog rada i svih oblika saradnje u sadašnjosti i budućnosti.

S poštovanjem,
Prof. dr Biserka Vukomanović Đurđević,
predsednik Posebnog odbora za medicinsko obrazovanje Regionalne lekarske komore Beograda

EDITORIAL

Serbian Medical Chamber begins the April in Belgrade with National Congress, with International participation, named "Infections-challenges in diagnostics and therapy".

Infections represent a daily challenge of medical doctors. They are regarded as accountable for high morbidity and mortality rate. In addition, during COVID-19 pandemics, there were certain studies showing importance of the impact that infections make to psychological and sociological factors of living. Prevention, pharmacological therapy and immunization are one of the ways of getting in the way to infections. Clinical appearance and symptomatology may differ, concerning the variety of systems it may affect. There was also certain connection proven between specific microbiological agents and malignities.

Organization and science committee, with assistance of lecturers present modern data about microbiological agents of infections and biological and pathological defense mechanisms. The abstracts passed the Congress Scientific Committee review. Lectures make a fusion of practical knowledge and science.

Serbian Medical Chamber strongly encourages participation of younger colleagues, to motivate them to participate in scientific work and broaden their horizons with up to date knowledge of infections. Concerning the fact that this Congress presents a unity of medical experts of all ages, we would like to emphasize the importance of team work and community spirit.

In between these lectures, we wish you having a good time and make new friendship and plans for future team work.

Sincerely,

Professor Biserka Vukomanović Đurđević, PhD

President of the Special board for medical education
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NESPECIFIČNI I SPECIFIČNI MEHANIZMI ODBRANE ORGANIZMA

NONSPECIFIC AND ADAPTIVE HOST DEFENSE MECHANISMS

Sanjin Kovačević[1], Jelena Nešović Ostojić[1]

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SAŽETAK

Odbrana organizma počinje mehanizmima nespecifične odbrane, koji nakon toga omogućavaju i aktivaciju specifičnog imunskog odgovora. Mehanizme nespecifične odbrane organizma čine: anatomske prepreke, reakcije određenih sistema i organa, cirkulišuće i tkivne ćelije, cirkulišući proteini, citokini, kao i zapaljenska reakcija. Koža i sluznice predstavljaju važne fizičke barijere odbrane, gde, da bi mikroorganizam opstao, mora da prevaziđe štetno dejstvo kisele sredine kože bogate masnim kiselinama, kao i površine sluzokože, koja je prekrivena sluznim omotačem koji zadržava mikroorganizme i olakšava njihovo odstranjivanje mukocilijarnim čišćenjem. Takođe, mnoge sluzokože sadrže normalnu bakterijsku floru koja se opire naseljavanju patogena i inficiranju organizma domaćina, a uz to pljuvačka i suze sadrže i antimikrobne supstance, kao što su lizozim, antivirusni interferoni i dr. Patogeni koji prevaziđu navedene fizičke barijere odbrane organizma, suočavaju se sa endocitnim, fagocitnim i zapaljenskim odgovorima, kao i genetskim činiocima koji uslovljavaju stepen njihovog preživljavanja i razmnožavanja. Glavni predstavnici nespecifične ćelijske odbrane organizma su neutrofilni granulociti, monociti i makrofagi koji svoju ulogu u odbrani organizma ostvaruju procesom fagocitoze, kao i NK ćelije. Fagocitoza predstavlja važan urođeni način odbrane organizma, a fagociti se pojavljuju brzo na mestu infekcije uz sadejstvo početka zapaljenskog procesa. U nespecifičnoj odbrani organizma učestvuju i cirkulišući proteini, kao što su: sistem komplemenata, proteini akutne faze, i dr. Sa druge strane, specifična odbrana organizma se razvija sporije i obezbeđuje kasniju, više specijalizovanu i delotvorniju odbranu organizma. Obuhvata pre svega humoralnu imunost, posredovanu antitelima stvorenim od strane B limfocita i celularnu, posredovanu T limfocitima.

Ključne reči: infekcija, odbrana organizma, imunski odgovor

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ABSTRACT

The nonspecific defense is the body's first line of defense and includes: physical barriers, reactions of certain systems and organs, circulating and tissue cells, circulating proteins, cytokines, as well as the inflammatory reaction. The skin and mucous membranes represent important physical barriers, where the microorganism in order to survive, must overcome the harmful effect of the acidic environment of the skin. Mucous membranes retain the microorganisms and facilitates their removal by mucociliary cleaning. Also, they contain normal bacterial flora that prevent colonization by pathogens and infection the host organism. Saliva and tears also contain antimicrobial substances, such as lysozyme, antiviral interferons, etc. Pathogens that overcome physical barriers, face endocytic, phagocytic and inflammatory responses, as well as genetic factors that determine the degree of their survival and reproduction. The main representatives of the cellular nonspecific defense are: neutrophil granulocytes, monocytes and macrophages, which fulfill their role in the defense of the organism through the process of phagocytosis, as well as NK cells. Phagocytosis is an important innate way of defending the organism, and phagocytes appear quickly at the site of infection contributing to the inflammatory process. Circulating proteins also have important role in the nonspecific immune response, such as: complement system, acute phase proteins, etc. On the other hand, the specific immune response develops more slowly and provides more specialized and more effective defense mechanism. It primarily includes humoral immunity, mediated by antibodies secreted by B lymphocytes, and cellular immunity, mediated by T lymphocytes.

Key words: infection, host defense, immune response

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PHARMACOLOGICAL APPROACH TO THE TREATMENT OF INFECTIONS: PREVIOUS APPROACHES AND NEW TWENDENCES

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SAŽETAK

Dugo su u istoriji čovečanstva infektivne bolesti predstavljale dominantan zdravstveni problem. Međutim, sa otkrićem antibiotika i razvojem ove oblasti farmakoterapije dolazi do lakšeg izlečenja i smanjenja smrtnosti izazvanih infektivnim agensima. Nažalost ovo nije bio kraj zdravstvenih problema koji su nastajali kao posledica infekcija, bakterije i drugi mikroorganizmi su veoma brzo pronašli način da zaobiđu efekte antimikrobne terapije što nas je uvelo u vrzino kolo u kome se prepliću različite strategije kojima pokušavamo da se izborimo sa antimikrobnim infekcijama uz odgovor mikroorganizama na ove strategije. Kako bi stalno bili korak ispred mikroorganizama neophodno je razumeti na koji način odgovoriti na izazove nastale usled pojave rezistencije prema antimikrobnoj terapiji. Pre svega ovde podrazumevamo izazove poput razvoja novih strategija u potrazi za novim antimikrobnim sredstvima, osmišljavanje efikasnijih preventivnih mera, bolje razumevanje tehnologije kreiranja antibiotika i rezistencije na antibiotika. Zbog toga je neophodno da stalno izvlačimo nove zaključke iz lekcija koje smo naučili u prošlosti.

Ključne reči: lečenje infekcija, bakterijske infekcije, virusne infekcije, rezistencija

ABSTRACT

For a long time in the history of mankind, infectious diseases represented a dominant health problem. However, with the discovery of antibiotics and the development of this field of pharmacotherapy, we managed to cure these infections and reduce the mortality caused by infectious agents. Unfortunately, this was not the end of the health problems that arose as a result of infections. The bacteria's and other microorganisms very quickly found a way to bypass the effects of antimicrobial therapy. This led us into a vicious cycle in which different treatment strategies are intertwined to fight antimicrobial infections together with responses of microorganisms to these strategies. To constantly be one step ahead of microorganisms, it is necessary to understand how to respond to these challenges caused by the emergence of resistance to antimicrobial therapy. First of all, here we mean challenges such as the development of new strategies for the search for new antimicrobial agents, the design of more effective preventive measures, and a better understanding of the technology for creating antibiotics when resistance to antibiotics is developed. This is why it is necessary to constantly draw new conclusions from the lessons we have learned in the past.

Key words: treatment of infections, bacterial infections, viral infections, resistance

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INFECTIONS - CHALLENGES IN DIAGNOSIS AND TREATMENT

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SAŽETAK

Kroz istoriju čovečanstva infektivne bolesti imale su veliki uticaj, a neke su čak i menjale sliku sveta. Razvoj medicine, i nauke uopšte, podizanje materijalnog i higijenskog statusa stanovništva, dovelo je do toga da neke infektivne bolesti isčeznu, a da su ih „zamenile" nove koje ostaju jednaka pretnja savremenom društvu.

Danas se susrećemo sa perzistentnim infekcijama (*HBV, HCV, H. pylori, HPV, EBV, HHV6, B. burgdorferi...*) koje se povezuju sa nekim malignim oboljenjima i nezaraznim bolestima, te blagovremena dijagnostika i lečenje ovih infekcija ima ekstremano važan značaj.

Razvoj mikrobiologije, posebno u području molekularne biologije doveo je ne samo do napretka u dijagnostici već i do otkrića više od tridesetak novih infektivnih agensa u poslednjih desetak godina.

Produžetak životnog veka stanovništva proširilo je granice i zadatke infektologije, i donelo nove doktrine u dijagnostici i lečenju infekcija kod gerijatrijske populacije. Napredak medicine, transplantacija organa, primena različite imunomodulatorne terapije kao i hemioterapije u različitim oblastima medicine donosi nove oportunističke infekcije i nove dijagnostičke i terapijske procedure.

Intrahospitalne infekcije jesu značajan problem u zdravstvu, uzrok su porasta morbiditeta i mortaliteta, kao i faktor koji doprinosi produženju bolničkog lečenja. Ove infekcije su najčešće izazvane multirezistentnim mikroorganizmima, međutim njihova prevencija i suzbijanje još uvek predstavljaju veliki zdravstveni problem. Iako je dostupna savremena i moćna antimikrobna terapija, multirezistentni mikroorganizmi i dalje dobijaju bitku i odolevaju ovom moćnom oružju.

Jedno od najvećih dostignuća u medicini, i nauci uopšte, primena vakcina, spasila je i spašava milijarde ljudi od različitih infekcija širom sveta. Dostupnost medija, društvenih mreža, televizije dovelo je do toga da različiti anti-vakserski lobiji ubede ljude u štetnost vakcina. Ovo nam je donelo posle više od trideset godina epidemiju morbila 2016/2017.godine, a danas smo na pragu nove epidemije.

I pored svih dostupnih dijagnostičkih i terapijskih mera, porasta materijalnog statusa stanovništva, te zakonskih procedura koje se preduzimaju za sprečavanje i suzbijanje infektivnih bolesti, ne može se bitno uticati na prirodni, ciklični tok infekcija poput gripa, varičele, šarlaha, virusnih i bakterijskih infekcija CNS-a.

Infekcija sa HIV virusom, tuberkuloza, različite polno prenosive infekcije, čine još jedan jednako važan deo savremene infektologije, donoseći nove izazove u dijagnostici i terapiji.

Broj novih zaraznih bolesti i ponovna pojava nekih dobro poznatih bolesti je u stalnom porastu, a više od 70% ovih bolesti čine zoonoze čiji su uzročnici većinom virusi (*virus Majmunskih boginja, virus Zapadnog Nila, virus gripa, Denga, Zika, MERS, SARS CoV1, SARS CoV2, virus hepatitisa E*. . .) ali i brojne bakterije i paraziti.

Na kraju, značaj infekcija, njihovu nepredvidivost, kao i sve dijagnostičke i terapijske izazove u infektologiji, pokazao je virus *SARS-CoV 2* koji je početkom 2020.godne izazvao pandemiju *Kovid-19*, koja i nakon tri godine još uvek traje.

Ključne reči: infekcije, infektivne bolesti, terapija i dijagnostika, pandemija

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ABSTRACT

Throughout the history of mankind, infectious diseases have had a great impact, and some have even changed the image of the world. The development of medicine and science in general, accompanied with heightened material and hygienic status of the population, led to the disappearance of some infectious diseases and their "replacement" with new ones that pose an equal threat to modern society.

Today we encounter persistent infections (*HBV, HCV, H. pylori, HPV, EBV, HHV6, B. Burgdorferi, etc.*) that are associated with some malignant diseases and non-infectious diseases, making the timely diagnosis and treatment of these infections extremely important.

The development of microbiology, especially in the field of molecular biology, led not only to a progress in diagnostics, but also to the discovery of more than thirty new infectious agents in the last ten years.

The extension of the life span of the population expanded the scope and tasks of infectology, and brought new doctrines in the diagnosis and treatment of infections in the geriatric population. The advancement of medicine, organ transplantation, application of various immunomodulatory therapies as well as chemotherapy in different fields of medicine bring novel opportunistic infections and necessitate novel diagnostic and therapeutic procedures.

Nosocomial infections are a significant problem in healthcare, causing an increase in morbidity and mortality, and contributing to the prolonged hospitalization. These infections are most often caused by multidrug-resistant microorganisms, however their prevention and control still represents a major healthcare challenge. Although modern and powerful antimicrobial therapies are available, multidrug-resistant microorganisms are still winning the battle and resisting this powerful weaponry.

One of the greatest achievements in medicine and science in general, the use of vaccines, saved and continues to save billions of people from various infections worldwide. The accessibility of media, social networks, and television has enabled various anti-vaxxer lobbies to convince people of the harmfulness of vaccines. This resulted in the first epidemic of measles after more than thirty years in 2016/2017, and today we are at the brink of a new measles epidemic.

Despite all the available diagnostic and therapeutic measures, the improved material status of the population, and the legal procedures undertaken to prevent and suppress infectious diseases, a significant impact has not been made on the natural, cyclical course of infections such as flu, varicella, scarlet fever, viral and bacterial infections of the CNS, etc.

HIV infection, tuberculosis, and various sexually transmitted infections, constitute another equally important part of modern infectology, bringing new challenges in diagnosis and therapy.

The number of emerging diseases and the reappearance of some well-known diseases is constantly on the rise, with more than 70% of these diseases being zoonoses, the causative agents of which are mostly viruses (*Monkey pox virus, West Nile virus, Influenza virus, Dengue, Zika, MERS, SARS-CoV-1 , SARS-CoV-2, hepatitis E, etc.*) but also numerous bacteria and parasites.

Finally, the importance of infections, their unpredictability, as well as all the diagnostic and therapeutic challenges in infectology, have been demonstrated by the *SARS-CoV-2* virus, which caused the *Covid-19* pandemic at the beginning of 2020 that is still ongoing after three years.

Key words: infection, infectious disease, diagnosis and tratment, pandemic

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PATHOLOGY OF INFECTIONS OF THE CNS

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SAŽETAK

Uloga patologije u savremenoj dijagnostici infektivnih oboljenja CNS-a je smanjena zbog dominacije upotrebe metoda vizualizacije, mikrobiologije i molekularne biologije u ovoj oblasti.

Bakterijski, virusni i gljivični leptomeningitisi, virusni i gljivični encefalitisi, kao i apscesi mozga, su retkost u autopsijskom materijalu. U veoma retkim autopsijskim slučajevima, kada klinička slika nije ukazivala na ove dijagnoze, radilo se o hroničnim i teškim bolesnicima, uglavnom bez odgovarajuće zdravstvene nege. Retke gljivične infekcije CNS-a, koje su blagovremeno dijagnostikovane, ali u kojima nije došlo do željenog odgovora na antimikotičnu terapiju zahtevaju autopsijsku verifikaciju. Relativno mala uloga patologije u savremenoj biopsijskoj dijagnostici infektivnih oboljenja CNS-a se odnosi na slučajeve sa neobičnom kliničkom slikom, koja u najvećem broju slučajeva ima klinički aspekt tumora. Najčešće se radi o apscesima mozga, usled njihove radiološke i histološke sličnosti sa difuzno-infiltrativnim tumorima mozga, ređe o cerebralnoj toksoplazmozi kod pacijenata kojima prethodno nije dijagnostikovana imunodeficijencija. Gljivična oboljenja, naročito u solarnoj regiji, takođe mogu imati kliničku sliku nefunkcijskog tumora hipofize. Patohistološkom dijagnozom se prepoznaje gljivična infekcija, a precizna tipizacija gljivice se vrši mikološkim ispitivanjem. Patohistološka verifikacija je neophodna kod hirurški tretiranih slučajeva cerebralne cisticerkoze i apscesa mozga kod kojih su ova oboljenja prepoznata klinički i radiološki. Bitno je naglasiti da terapijska primena kortikosteroida, kao i antibiotika i antimikotika širokog spektra, može značajno izmeniti histološku sliku i otežati histopatološku dijagnostiku.

Kliničko-patološka korelacija je neophodna u razmatranju svih neuroloških, neurohirurških i neuroinfektivnih slučajeva sa neobičnom kliničkom slikom kod kojih bi patohistološka dijagnostika doprinela preciznijoj dijagnostici i tretmanu.

Ključne reči: infekcije centralnog nervnog sistema, kliničko-patloška korelacija, diferncijalna dijagnoza

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ABSTRACT

The role of pathology in the modern diagnosis of infectious diseases of the CNS is reduced due to the dominance of the use of visualization methods, microbiology and molecular biology in this area.

Bacterial, viral and fungal leptomeningitis, viral and fungal encephalitis, as well as brain abscesses, are rare in autopsy material. In the very rare autopsy cases related to these diagnoses, patients had multiple chronic diseases and they were without proper medical care. Rare fungal infections of the CNS, which have been properly diagnosed, but without desired response to antifungal therapy, require autopsy verification. The relatively small role of pathology in the modern biopsy diagnosis of infectious diseases of the CNS refers to cases with an unusual clinical picture, which in most cases has the clinical aspect of a tumor. Most often, it is about brain abscesses, due to their radiological and histological similarity with diffuse-infiltrative brain tumors, less often about cerebral toxoplasmosis in patients who were not previously diagnosed with immunodeficiency. Fungal diseases, especially in the sellar region, can also have the clinical picture of a non-functional pituitary tumor. Fungal infection is recognized by pathohistological diagnosis, and precise typing of the fungus is done by mycological examination. Pathohistological verification is necessary in surgically treated cases of cerebral cysticercosis and brain abscess in which these diseases are recognized clinically and radiologically. It is important to emphasize that the therapeutic application of corticosteroids, as well as broad-spectrum antibiotics and antimycotics, can significantly change the histological picture and make histopathological diagnosis difficult.

Clinicopathological correlation is necessary in the consideration of all neurological, neurosurgical and neuroinfectious cases with an unusual clinical picture in which pathohistological diagnosis would contribute to more precise diagnosis and treatment.

Key words: infections of the central nervous system, clinicopathological correlation, differential diagnosis

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NEUROHIRURŠKI ASPEKT LEČENJA PARAZITOZA CENTRALNOG NERVNOG SISTEMA

NEUROSURGICAL ASPECT OF THE TREATMENT OF PARASITOSIS OF THE CENTRAL NERVOUS SYSTEM

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SAŽETAK

Parazitarne infestacije se često smatraju karakterističnim za zemlje u razvoju i povezuju se sa neadekvatnim socioekonomskim uslovima i lošom zdravstvenom zaštitom. Sa razvojem procesa globalizacije i migracijama, ovi nekada endomski problemi poprimaju globalni karakter. Poznavanje osnova dijagnostičkih i terapijskih protokola od strane drugih specijalnosti, a ne samo infektologa dobija na značaju zbog sve veće populacije imunokompromitovanih pacijenata kod kojih se često dijagnostikuju parazitoze.

Napredovanje serološke i radiološke dijagnostike kao i bolje poznavanje terapijskih opcija doprinelo je efikasnijem lečenju ovih pacijenata, međutim u dobro selektovanim slučajevima, hirurška resekcija lezija predstavlja izlečenje, ili smanjuje potrebu ili dužinu trajanja terapije antiparaziticima. Operativno lečenje za određene pacijente i dalje je jedini način rešavanja komplikacija, poput hidrocefalusa ili kompresivnog efekta parazitarne ciste ili difuznog edema mozga.

Mada manje tehnički zahtevne za neurohirurga od procedura neurovaskularne, neuroonkološke ili funkcionalne prirode, operacije usmerene na lečenje parazitoza CNS predstavljaju izazov jer intraoperativna ruptura parazita može ugroziti pacijenta i dovesti do diseminacije i rekurencije bolesti.

U okviru predavanja, prikazujemo slučaj pacijenta operisanog u našoj ustanovi zbog Ehinokokne ciste velikog mozga.

Na kraju, smatramo da s obzirom da u selektovanim slučajevima operativno lečenje predstavlja metodu izbora, neurohirurg ostaje važan član multidisciplinarnog tima uključenog u lečenje ovih pacijenata i naglašavamo značaj selekcije kako pacijenata tako i trenutka operativnog lečenja.

Ključne reči: neurohirurgija, parazitoza, neurocisticerkoza, ehinokokus

ABSTRACT

Traditionally, parasitic infestations are considered characteristic of developing countries and are associated with inadequate socioeconomic conditions and poor health care. With globalization and migrations, these once endemic problems take on a global character. Besides infectious disease specialists, other practitioners are increasingly required to be involved with diagnostic and therapeutic protocols due to the growing population of immunocompromised patients, often diagnosed with parasitic infestations.

Advances in serological and radiological diagnostics as well as better therapeutic options have contributed to more effective treatment. However, in well-selected cases, surgical resection represents a cure or reduces the need or duration of antiparasitic therapy. Surgery is sometimes still the only way to solve late complications of the disease, such as hydrocephalus or diffuse brain edema.

Although technically less demanding for a neurosurgeon than procedures of a neurovascular, neurooncological, or functional nature, operations aimed at the treatment of CNS parasitosis represent a challenge because intraoperative rupture of the parasite can endanger the patient and lead to dissemination and recurrence of the disease.

As part of the lecture, we present the case of a patient operated on in our institution due to an Echinococcal cyst of the cerebrum.

Finally, we believe that considering that in selected cases operative treatment is the method of choice, the neurosurgeon remains an important member of the multidisciplinary team involved in the treatment of these patients, and we emphasize the importance of both selection of patients and timing of the operative treatment.

Key words: neurosurgery, parasitosis, neurocysticercosis, echinococcus

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SAVREMENI PRISTUP MEDIKAMENTOZNOJ TERAPIJI BAKTERIJSKIH I VIRUSNIH INFEKCIJA CNS-A

A MODERN APPROACH TO DRUG THERAPY OF BACTERIAL AND VIRAL CNS INFECTIONS

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SAŽETAK

Infekcije centralnog nervnog sistema (CNS) izazivaju patogeni mikroorganizmi, kao što su bakterije, virusi i gljivice. Najčešći tipovi CNS infekcija su meningitis, encephalitis i apsces mozga. S obzirom da ove infekcije imaju visok morbiditet i mortalitet, brzo otkrivanje i lečenje su ključni za preživljavanje pacijenta. Terapiju infekcija CNS-a treba započeti odmah. Odlaganje antivirusne i antibiotske terapije može potencijalno biti fatalno, posebno u slučajevima bakterijskog meningitisa i herpes simpleks virusnog encefalitisa. Emprijska terapija ima za cilj da pokrije najčešće uzročnike infekcija, te se zbog toga primenjuju antibiotici širokog spektra i antivirusni lekovi (1). Zbog karakteristika hematoencefalne barijere, terapijski algoritmi su limitirani, što ima za posledicu slične režime lečenja infekcija CNS-a širom sveta. Poslednjih godina pojavile su se nove tehnike administracije lekova u CNS, kao što je korišćenje adenovirusnih vektora i nano nosača (2). U ovom pregledu biće sumirani svi faktori koji se moraju uzeti u obzir da bi se obezbedila optimalna efikasnost antimikrobnih lekova u CNS-u.

Ključne reči: meningitis, encefalitis, apsces mozga, terapija

ABSTRACT

Infections of the central nervous system (CNS) are caused by pathogens, such as bacteria, viruses and fungi. The most common types of CNS infections are meningitis, encephalitis, and brain abscess. Since these infections have a high morbidity and death rate, prompt detection and treatment are crucial for patient survival. Treatment for these conditions should begin as soon as they are suspected. Delaying antibiotic and antiviral therapy could potentially be life-threatening, especially in cases of bacterial meningitis and herpes simplex virus encephalitis. The therapy aims to cover the most frequent infections; as a result, broad-spectrum antibiotics and antiviral medicines are preferable (1). Because of the blood brain barrier's various constraints, therapeutic algorithms are limited, resulting in similar treatment regimens for CNS infections worldwide. In recent years, novel medication administration techniques into the CNS have emerged, such as adenovirus-associated virus-mediated gene delivery or nano-carriers (2). These innovative drug delivery systems may be used to enhance the penetration of anti-infectives into the CNS. This review will summarize all the factors that must be considered to ensure optimal efficacy of antimicrobial drugs in the CNS.

Key words: meningitis, encephalitis, brain abscess, treatment

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COVID-19 INFEKCIJA KOD DEMIJELINIZACIONIH BOLESTI CENTRALNOG NERVNOG SISTEMA

COVID-19 INFECTION IN DEMYELINATING DISEASES OF THE CENTRAL NERVOUS SYSTEM

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SAŽETAK

Najčešća demijelinizaciona bolesti centralnog nervnog sistema je multipla skleroza (MS) koja predstavlja autoimunsku ali i neurodegenerativnu bolest koja je najčešći uzrok netraumatskog invaliditeta mladih osoba. Poznato je da bolesnici od MS imaju povećan rizik od razvoja infekcija u poređenju sa opštom populacijom, a posebno se to odnosi na bolesnike koji se leče imunomodulatornom terapijom (IMT) lekovima koja imaju visoku efikasnost (VE) i imunosupresivni efekat.

Istraživanja tokom COVID-19 pandemije su pokazala da bolesnici od MS nisu u povećanom riziku od oboljevanja u poređenju sa opštom populacijom, osim bolesnika koji su primili pulsnu kortikosteroidnu terapiju za lečenje relapsa bolesti. Takođe je pokazano da IMT terapija koja se primenjuje u lečenju MS ne utiče na rizik od oboljevanja kao ni na težinu COVID-19 infekcije, osim leka okrelizumab. Tako su i izdate preporuke da bolesnici od MS svakako nastave primenu IMT tokom pandemije, uz određene mere opreza kod primene lekova VE. Utvrđeno je da su faktori koji su povezani sa lošijim ishodom COVID-19 infekcije u populaciji MS bolesnika: starost, veći stepen invaliditeta, progresivne forme bolesti, muški pol i prisustvo komorbiditeta.

Drugo, značajno pitanje koje se postavljalo tokom pandemije je bilo bezbednost vakcine protiv SARS-Cov-2 COVID-19 infekcije, kao i dejstvo IMT na efikasnost vakcine. Usledile su preporuke da su sve vrste dostupnih vakcina za prevenciju COVID-19 infekcije, bezbedne i kod bolesnika od MS, kao i da je efikasnost vakcine slična kao i u opštoj populaciju kod bolesnika koji se leče IMT umerene efikasnosti, dok su pojedini lekovi VE umanjivali efikasnost vakcina.

Ključne reči: COVID-19, multipla skleroza, imunomodulatorna terapija,

ABSTRACT

The most common demyelinating disease of the central nervous system is multiple sclerosis (MS), which is an autoimmune and neurodegenerative disease that is the most common cause of non-traumatic disability in young people. It is well known that MS patients have an increased risk of developing infections compared to the general population, and this especially applies to patients treated with immunomodulatory therapy (IMT) with drugs that have a high efficacy (VE) and immunosuppressive effect.

Research during the COVID-19 pandemic has shown that MS patients are not at an increased risk of developing the disease compared to the general population, except for patients who received pulse corticosteroid therapy for the treatment of disease relapse. It has also been shown that IMT therapy used in the treatment of MS does not affect the risk of disease or the severity of the COVID-19 infection, except for the drug ocrelizumab. Thus, recommendations were issued that patients with MS should definitely continue using IMT during the pandemic, with certain precautions when using VE drugs. It was determined that the factors associated with a worse outcome of COVID-19 infection in the MS patient population are: age, greater degree of disability, progressive forms of the disease, male gender and the presence of comorbidities.

Another important question raised during the pandemic was the safety of the vaccine against SARS-Cov-2 COVID-19 infection, as well as the effect of IMT on vaccine efficacy. This was followed by recommendations that all types of available vaccines for the prevention of COVID-19 infection are safe in MS patients, as well as that the effectiveness of the vaccine is similar to that in the general population in patients treated with IMT of moderate effectiveness, while certain VE drugs reduced the effectiveness vaccine.

Key words: COVID-19, multiple sclerosis, imunomodulatory treatment

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COVID-19 AND EPILEPSY

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SAŽETAK

Pandemija izazvana koronavirusom je pokrenula mnogobrojna pitanja, strahove i dileme, posebno kada su u pitanju osobe sa hroničnim oboljenjima. Epilepsija, hronična bolest mozga od koje boluje oko 50 miliona ljudi u svetu nije bila izuzetak, te ćemo se u ovom radu baviti nekim od najvažnijih problema kada su u pitanju ove dve bolesti i njihov međusobni uticaj.

Jedno od prvih pitanja je bilo da li oboleli od epilepsije imaju veći rizik za težu kliničku sliku COVID-19 infekcije. Pokazano je da epilepsija sama po sebi ne nosi rizik od težeg oblika infekcije, ali da neki bolesnici sa epilepsijom mogu uzimati lekove (imunosupresivi) ili imati komorbiditete koji pogoduju težoj kliničkoj slici i lošijem ishodu bolesti.

S druge strane, u nekim populacionim studijama je pokazano da COVID-19 infekcija kod bolesnika sa hroničnom epilepsijom doprinosi češćoj pojavi napada. Razloga za to ima dosta: emocionalni stres, neredovno uzimanje lekova, nesanica, itd. Posebno je pokazano da su bolesnici sa hroničnom farmakorezistentnom epilepsijom i epilepsijom izazvanom tumorima u većem riziku od slabije kontrole napada.

Posebno važno pitanje je da li COVID-19 infekcija povećava rizik za nastanak epilepsije kod prethodno zdravih osoba. Neke studije su pokazale da taj rizik nije veći, ali da umereni rizik postoji u populaciji starijih od 60 godina. Prema sopstvenom iskustvu, znamo da COVID-19 infekcija može dovesti do pojave epileptičnog statusa ili serije epileptičkih napada. Iako je pretpostavka da su inflamatorni mehanizmi uzrok pojave napada, još uvek nije poznato i kakav je dugoročni ishod kod ovih bolesnika.

Ključne reči: koronavirus, farmakorezistentna epilepsija, epileptični status

ABSTRACT

The pandemic caused by the coronavirus has raised many questions, fears and dilemmas, especially among people with chronic diseases. Epilepsy, a chronic brain disease that affects about 50 million people worldwide is no exception, and we will deal with some of the most important problems and possible influence of those two diseases.

One of the first questions is whether people with epilepsy have a higher risk for a more severe clinical picture of the COVID-19 infection. It has been shown that epilepsy by itself does not carry the risk for a more severe form of infection, but that some patients with epilepsy may take drugs (for example, immunosuppressants) or have comorbidities that may favor a more severe COVID-19 manifestations and poor outcome.

On the other hand, in some population based studies, it has been shown that COVID-19 infection in patients with chronic epilepsy contributes to a more frequent occurrence of seizures. Some reasons are emotional stress, irregular medication intake, insomnia, etc. In particular, it has been shown that patients with pharmacoresistant and tumor-related epilepsy are at higher risk for increased seizure frequency.

A particularly important question is whether COVID-19 infection increases the risk of developing epilepsy in previously healthy individuals. Many studies have shown that this risk is not higher, but that a moderate risk exists in elderly people over 60 years. COVID-19 infection can cause occurrence of status epilepticus or cluster of seizures, but it is still unknown what would be the long-term outcome is in these patients.

Key words: coronavirus, pharmacoresistant epilepsy, status epilepticus

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KASNE NEUROLOŠKE KOMPLIKACIJE NEKIH VIRUSNIH INFEKCIJA U RAZVOJNOM DOBU

LATE NEUROLOGICAL CONSEQUENCES OF VIRAL INFECTIONS IN THE DEVELOPING AGE

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SAŽETAK

Uvod: Infekcija virusom morbila je zarazna bolest koja se najčešće javlja u detinjstvu, sa visokom incidencijom u zemljama u razvoju. Male boginje izaziva virus iz porodice paramiksovirusa i obično se prenosi respiratornim sistemom putem vazduha. Morbiditet može biti povezan sa akutnom infekcijom, ali se mogu javiti i kasne neurološke komplikacije. Najčešće neurološke komplikacije su: primarni encefalitis morbila, akutni postinfektivni encefalomijelitis morbila, encefalitis inkluzionih tela morbila i subakutni sklerozirajući panencefalitis (SSPE). Nevakcinisana deca su u najvećem riziku od morbila i njihovih komplikacija, uključujući i smrtni ishod. Ova zarazna bolest se može sprečiti vakcinacijom.

Pacijenti i metode: Retrospektivno smo analizirali 15 pacijenata uzrasta do 18. godina, sa dijagnozom SSPE, dijagnostikovanih i lečenih u Klinici za neurologiju i psihijatriju za decu i omladinu.

Rezultati: U studiju je uključeno 11 dečaka (73,3%) i 4 devojčiće (26,7%). Prosečan uzrast na početku bolesti 8,3 (opseg: 4,5-13,8 godina). Prosečnog uzrasta 10,2 godine (opseg: 4,5–14 godina). Segmentni mioklonus je inicijalna manifestacija bolesti, 1,5-3 meseca, pre ataksije i kongnitivnog narušenja. Atipični početak bolesti je zabeležen kod 46,7% pacijenata i prezentovan je edemom papile i kortikalnim slepilom kod 2 pacijenta (13,3%), eileptičnim napadima kod 2 pacijenta (13,3%), piramidnim deficitom kod 2 pacijenta (13,3%) i psihotičnim izmenama kod 1 pacijenta (6,7%). Smrtni ishod je zabeležen kod 11 (73,3%) pacijenata, nakon 3 do 22 meseca trajanja bolesti, prosečno 11,8 meseci.

Zaključak: SSPE je teška, životno ugrožavajuća, kasna komplikacija infekcije virusom morbila. Potrebno je povećati obuhvat imunizacijom, pogotovu u vulnerabilnoj i marginalizovanoj populaciji.

Ključne reči: Morbile, subakutni sklerozirajući panencefalitis, vakcinacija, atipična klinička slika

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ABSTRACT

Introduction: Measles is an infectious disease that most commonly occurs in childhood, with a high incidence in developing countries. Measles is caused by a virus that belongs to paramyxoviridae family and it usually transmitted via the respiratory system in air droplets form. Morbidity may be related to acute infection, but late neurological consequences may also occur. The most common neurological complications are primary measles encephalitis, acute postinfectious measles encephalomyelitis, measles inclusion body encephalitis, and subacute sclerosing panencephalitis (SSPE). Unvaccinated children are at the highest risk of measles and its complications, including death. This infectious disease can be prevented by vaccination.

Patients and Methods: 15 patients aged up to 18, with a diagnosis of SSPE were retrospectively analysed, diagnosed and treated at the Clinic of Neurology and Psychiatry for Children and Youth.

Results: 11 (73.3%) boys and 4 (26.7%) girls were included in the study. The mean age of patients at baseline was 8.3 (range: 4.5-13.8) years, while the mean age at analysis was 10.2 (range: 4.5–14) years. Segmental myoclonus was the initial manifestation of the disease, 1.5-3 months, before ataxia and cognitive impairment. The atypical revealing of the disease was recorded in 46.7% of patients and was presented by papilledema and cortical blindness in 2 (13.3%) patients, seizures in 2 patients (13.3%), pyramidal tract signs in 2 patients (13.3 %) and psychotic behavior in 1 patient (6.7%). The fatal (death) outcome was recorded in 11 (73.3%) patients, after 3 to 22 months of illness, an average of 11.8 months.

Conclusion: SSPE is a severe, life-threatening, late consequence of measles virus infection. It is necessary to increase immunization coverage, especially in vulnerable and marginalized populations.

Key words: Measles, subacute sclerosing panencephalitis, vaccination, atypical clinical presentation

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ULOGA KORTIKOSTEROIDA U AKUTNOM I HRONIČNOM BOLU

THE ROLE OF CORTIOSTEROIDS IN ACUTE AND CHRONIC PAIN

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SAŽETAK

Uvod: Glukokortikoidni steroidi postoje vekovima, ali njihova uloga u bolnim stanjima je nepotpuna. Jedno od razloga za ovo bi moglo biti naše razumevanje da su prednosti antiinflamatornih svojstava steroida u lečenju bola isključivo dopuna drugim primenjenim terapijama.
Metode: Cilj je da se opiše uloga kortikosteroida u upravljanju bolom i potreba za poboljšanjem trenutnih smernica za lečenje bolova.
Rezultati: Oralna, intramuskularna, intravenska, transkutana i neuraksijalna primena kortikosteroida se u poslednjih trideset godina koristi za lečenje degenerativnih bolesti (cervikalna i lumbalna degenerativna bolest, osteoartritis, itd.). Tokom evolucije u kontroli bola od oralne upotrebe steroida do fluoroskopski vođenih tehnika epiduralne injekcije steroida, započeto je istraživanje za primenu algoritma za korišćenje najnaprednijih metoda za ublažavanje bolova u leđima i radikularnog bola. Pored toga, kortikosteroidi se koriste intraartikularno za lečenje različitih bolnih stanja kod osteoartritisa.
Zaključak: Kortikosteroidi su standardni u multimodalnom algoritmu za lečenje bolova u leđima (cervikalni i lumbalni) i osteoartritisa u poslednje tri decenije. Mnoge studije pokazuju efikasnost epiduralnih kortikosteroida u kontroli radikularnog bola u donjem delu leđa i vratu. Međutim, neke studije pokazuju da čak i upotreba lokalnih anestetika bez kortikosteroida može biti korisna za pacijente. Pošto većina pacijenata zahteva ponovljene injekcije tokom progresije bolesti, neophodno je biti svestan svih rizika i koristi, bezbednosti pacijenata i isplativosti ovih procedura. Uprkos novim tretmanima za bol u leđima i osteoartritis, steroidi su i dalje istaknuti u lečenju ovih hroničnih bolnih stanja.

Ključne reči: kortikosteroidi, antiinflamatorno, akutni bol, hronični bol, bol u leđima, osteoartitis.

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ABSTRACT

Background: Glucocorticoid steroids have existed for centuries, but their role in painful conditions has been incomplete. One rationale for this could be our understanding that the benefits of the anti-inflammatory properties of steroids in pain management are exclusively supplementary to other therapies employed.
Methods: The aim is to describe roles of corticosteroids in pain management and the need to improve current pain management guidelines.
Results: Oral, intramuscular, intravenous, transcutaneous, and neuraxial administration of corticosteroids has, over the past thirty years, been used for managing degenerative disease states (cervical and lumbar degenerative disease, osteoarthritis, etc.). During the evolution in pain management from oral steroid use to fluoroscopically-guided epidural steroid injection techniques, research was begun to implement an algorithm for using the most superior methods of relieving back pain and radicular pain. Additionally, corticosteroids are used intraarticularly for treating different osteoarthritis pain conditions.
Conclusions: Corticosteroids are standard in the multimodal pain management algorithm for treating back pain (cervical and lumbar) and osteoarthritis over the past three decades. Many studies demonstrate the effectiveness of epidural corticosteroids in managing radicular low back and neck pain. However, some studies show that even using local anesthetics without corticosteroids may be beneficial for patients. Since most patients require multiple injections over the course of their disease progression, it is imperative to be aware of all risks and benefits, patients' safety, and cost-effectiveness of these respective procedures. Despite new treatments for back pain and osteoarthritis, steroids are still prominent in the management of these chronic pain conditions.

Keywords: corticosteroids, anti-inflammatory, acute pain, chronic pain, back pain, osteoarthritis

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INFECTIONS AND TREATMENT OF INFLAMMATORY BOWEL DISEASES

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SAŽETAK

Inflamatorne bolesti creva (IBD) u vidu ulceroznog kolitisa i Crohn-ove bolesti predstavljaju hronične inflamatorne bolesti digestivnog trakta koje karakterišu ponavljane epizode abdominalnih bolova uz dijareje sa ili bez primesa krvi, praćeno gubitkom u težini, anemijom i brojnim drugim vancrevnim poremećajima. Etiološki dominira saznanje da se radi o pojačanom imunološkom odgovoru, kod genetski predisponiranih osoba uz sadejstvo spoljnih faktora sredine a pokrenuto od strane T limfocita na prisustvo sopstvenih bakterija u digestivnom traktu. Poremećen imunološki status ovih pacijenata dovodi i pre specifičnog lečenja do veće incidence infektivnih komplikacija kod ovih pacijenata koje se povećavaju primenom brojnih terapijskih klasa lekova koje koristimo. Poznato je da su infekcije tokom primene kortikosteroida česta komplikacija a oni su osnovni bazični lek i nezamenljiv u terapiji ovih bolesti. Imunosupresivni lekovi metotrexat i azatioprin su takođe nezaobilazni lekovi za ove pacijente. Njihova primena je praćena povećanim rizikom od infektivnih komplikacija, kako virusnih, tako i bakterijskih i čest su razlog prekida primene ove klase lekova. Primena biološke terapije tipa antitela na tumor nekrozis faktor značajno je unapredila efikasnost lečenja IBD ali je uočena povećana incidenca infekcija tokom njihove primene. Najčešće se radi o upalama pluća, infekcijama kože i mekih tkiva. Istovremeno je povećan rizik od obolevanja ili reaktivacije tuberkuloze. Novije klase lekova tipa antiadhezivnih antitela su crevno selektivni lekovi čime se smanjuje sistemski neželjeni efekti uz prisutne infekcije gornjih respiratornih puteva, blažeg oblika i ne dovode do prekida ove terapije. Antitela na interleukin 12 i 23 su takođe značajno unapredili lečenje ovih bolesti i nisu povezani sa značajnije povećanom incidencom infektivnih komplikacija. Lekovi iz klase malih molekula kao što su JAK inhibitori i SP1 agonisti su povezuju sa infektivnim komplikacijama tipa herpes zoster i respiratornih infekcija ali ne teškog kliničkog oblika.

Ključne reči: Infekcije, upalne bolesti creva, terapijske komplikacije

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ABSTRACT

Inflammatory bowel diseases (IBD) in the form of ulcerative colitis and Crohn's disease are chronic inflammatory diseases of the digestive tract characterized by repeated episodes of abdominal pain with diarrhea with or without blood, accompanied with weight loss, anemia and numerous other extraintestinal disorders. Etiologically, it is the dominant understanding that the cause is heightened immune response, in genetically predisposed individuals with the help of external environmental factors, triggered by T lymphocytes to the presence of own bacteria in the digestive tract. The impaired immune status of these patients leads to a higher incidence of infectious complications in these patients even before specific treatment, which are increased by the use of numerous therapeutic classes of drugs that we use. It is known that infections during the administration of corticosteroids are a frequent complication, as they are the basic medication and irreplaceable in the therapy of these diseases. The immunosuppressive drugs methotrexate and azathioprine are also indispensable drugs for these patients. Their use is accompanied by an increased risk of infectious complications, both viral and bacterial, and are a frequent reason for discontinuing the use of this class of drugs. The application of biological therapy of the type of antibodies to tumor necrosis factor significantly improved the effectiveness of the treatment of IBD, but an increased incidence of infections was observed during their administration. The most common cases are pneumonia, skin and soft tissue infections. At the same time, the risk of getting or reactivating tuberculosis is increased. Newer classes of drugs of the type of anti-adhesive antibodies are intestinal selective drugs, which reduce systemic side effects with the presence of upper respiratory tract infections, of a milder form and do not lead to discontinuation of this therapy. Antibodies to interleukin 12 and 23 have also significantly improved the treatment of these diseases and are not associated with a significantly increased incidence of infectious complications. Medications from the class of small molecules such as JAK inhibitors and SP1 agonists are associated with infectious complications such as herpes zoster and respiratory infections, but not in a severe clinical form.

Key words: Infections, inflammatory bowel diseases, therapeutic complications

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AKUTNI PANKREATITIS: HIRURŠKE STRATEGIJE U LEČENJU PANKREASNE NEKROZE I INFEKCIJE

ACUTE PANCREATITIS: SURGICAL STRATEGY AND MANAGEMENT OF INFECTED PANCREATIC NECROSIS

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SAŽETAK

Akutni pankreatitis (AP) je akutno hemijsko (enzimsko) zapaljenje u toku koga može doći do autodigestije pankreasa i masnog, pretežno retroperitonealnog tkiva, prevremeno aktiviranim pankreasnim enzimima. Nepredvidiva je i potencijalno smrtonosna bolest, sa incidencom od 34 pacijenta na 100 000 stanovnika. Karakteriše je lokalni i sistemski inflamatorni odgovor koji ima i različit klinički tok. Može se, ali ne mora, komplikovati sekundarnom bakterijskom infekcijom. Ako nastane, infekcija dovodi do dramatičnog pogoršanja opšteg stanja, oštećenja funkcije vitalnih organa, naročito bubrega i pluća i uzrok je velike smrtnosti. Najvažnije je u ranoj fazi otkriti osnovni uzrok bolesti. Kamen u žučnoj kesi i žučnim vodovima (45%) i konzumirnje alkohola (20%) su najčešći uzroci AP. Ređi uzroci su razni lekovi, endoskopska retrogradna holangiopankreatografija (ERCP), hiperkalcemija, hipertrigliceridemija, infekcija, genetika, autoimune bolesti i (hirurške) traume. AP se može definisati kao blagi, umereno teški, ili teški prema revidiranoj Atlanta klasifikaciji. Najveći broj pacijenata ima blažu formu AP, koji se obično povlači u roku od desetak dana. Približno 20% pacijenata razvije umerenu ili tešku formu AP, sa nekrozom pankreasa ili peripankreasnog tkiva, insuficijencijom organa koja dovodi do značajne stope mortaliteta od 20–40%. Nekrotizirajući pankreatitis je često samo moguće otkriti CT-om ili MRI u intervalu od 72-96 h nakon početka simptoma.

Hitan ERCP indikovan je samo kod pacijenata sa bilijarnim pankreatitisom i istovremenim holangitisom. Može se razmotriti i kod slučajeva sa perzistentnom holestazom. Većina pacijenata sa sterilnom nekrozom leči se konzervativno. Kod bolesnika sa inficiranom nekrozom obično je potrebna intervencija koja može biti perkutana, endoskopska ili otvorena hirurška. Antibiotici se preporučuju samo kao tretman potvrđene ili klinički sumnjive sekundarne infekcije, za koju se smatra da je rezultat bakterijske translokacije mikroorganizama iz lumena creva.

Mnoga pitanja u vezi sa optimalnim tretmanom AP ostaju i dalje aktuelna. Osnovno je praćenje prisustva sindroma sistemskog inflamatornog odgovora ili otkazivanje organa pri prijemu u trajanju od najmanje 48 h kako bi se predvideo razvoj teškog oblika bolesti. Vrsta i brzina terapije tečnostima, kao i najbolje vreme za hiruršku intervenciju kod inficiranog nekrotizirajućeg pankreatitisa ostaju i dalje predmet rasprava.

Ključne reči: akutni pankreatitis, inficirana nekroza, sepsa, hirurgija

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ABSTRACT

Acute pancreatitis (AP) refers to sudden chemical (enzymatic) inflammation, pancreatic and fatty autodigestion with retroperitoneal fat lysis, caused by inappropriately activated pancreatic enzymes. It is an unpredictable disease which carries significant morality with an incidence of 34 per 100 000 patients. It is characterized by local and systemic inflammatory responses with varying clinical course. Frequently, management is complicated by bacterial superinfection. When it occurs, infection dramatically increases mortality by causing significant end-organ damage. In early stages, it is important to diagnose the aetiology of the disease. Gallstones (45%) and alcohol consumption (20%) are the most common causes. Infrequent causes include drugs, endoscopic cholangiopancreatography (ERCP), hypercalcemia, hypertriglyceridemia, infection, genetics, autoimmune disease, surgical trauma. AP is classified by the revised Atlanta classification into: mild, moderately severe, and severe subtypes. Most occurrences are mild, with complete resolution within 10 days. More severe subtypes occur in 20% of AP patients, with significant pancreatic and peripancreatic necrosis complicated by organ failure, accounting for the 20-40% mortality rate. The diagnosis of necrotizing pancreatitis is usually only possible with CT and MRI imaging 72-96h after symptom onset.

Urgent ERCP is indicated when gallstone pancreatitis with cholangitis is suspected. ERCP can also be considered in patients with significant and persistent cholestasis. Most patients with non-infected necrosis are managed conservatively. In patients with necrotic superinfection therapeutic options include percutaneous, endoscopic, or open surgical intervention. Antibiotics are recommended only in cases with confirmed or highly suspected secondary infections. Secondary infections are thought be due to bacterial translocation from the gut lumen.

Many questions regarding AP treatment remain unanswered. Monitoring patients for systemic inflammatory response syndrome and end-organ damage in the first 48h after admission remains crucial in predicting severe disease. Optimal resuscitation measures and timing of surgical intervention in infected necrotizing pancreatitis remain controversial.

Key words: acute pancreatitis, infected necrosis, sepsis, surgery

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INFEKTIVNA OBOLJENJA GASTROINTESTINALNOG TRAKTA U PEDIJATRIJSKOJ POPULACIJI

INFECTIOUS GASTROINTESTINAL DISEASES IN THE PEDIATRIC POPULATION

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SAŽETAK

Akutna infektivna oboljenja gastrointestinlnog trakta su veliki globalni zdravstveni problem i najčešći razlog hospitalizacije dece do pet godina. Akutna dijareja podrazumeva promene u broju (≥ 3/24 sata) i/ili konzistenciji stolica koja obično traje do 7 dana (najviše 14 dana) sa ili bez pridruženih simptoma (mučnina, povraćanje, abdominalne kolike, oslabljen apetit, povišena telesna temperatura).

U razvijenim zemljama virusi su najčešći prouzrokovači (75%), potom bakterije (20%), a najređe paraziti (5%). Najčešći virusni uzročnici su rotavirus (kod nevakcinisanih), norovirus i adenovirus, a od bakterijskih Campylobacter i Salmonella enteritidis, do kojih dolazi putem trovanja hranom. Clostridium difficile je čest uzročnik bolničke i vanbolničke infekcije, i povezana je sa primenom antibiotika

Dehidracija je ključni problem. Laboratorijska i mikrobiološka obrada je rezervisana za decu sa težom kliničkom slikom.

Prva terapijska linija kod dece sa blagom do srednje teškom dehidracijom prema preporukama *ESPGHAN* (Evropsko udruženje za pedijatrijsku gastroenterologiju, hepatologiju i nutriciju) je oralna rehidracija standardnim hipoosmolarnim rehidracionim solucijama. Kod dece uzrasta preko šest meseci sa blagom dehidracijom može da se pokuša sa primenom razblaženog soka od jabuke. Deca sa teškom dehidracijom rehidriraju se u bolničkim uslovima putem nazogastrične sonde, a najčešće intravenski. Primena probiotika Saccharomyces boulardi i/ili Lactobacillus rhamnosus GG u odgovorajućoj dozi smanjuje broj stolica i trajanje dijareje. Lečenje antibioticima je rezervisano za teže bakterijske infekcije. Preporučuje se rano otpočinjanje sa normalnom ishranom deteta bez ograničenja u ishrani kod većine dece.

Ključne reči: akutna infektivna dijareja, deca, rehidracija, probiotici

ABSTRACT

Acute infectious gastrointestianl diseases are a major global health problem and the most common reason for hospitalization of children under the age of five. Acute diarrhea is defined by the changes in the number (≥ 3/24 hours) and/or consistency of stools that usually lasts up to 7 days (maximum 14 days) with or without associated symptoms (nausea, vomiting, abdominal colic, anorexia, fever).

In developed countries, viruses are the most common causes (75%), then bacteria (20%), and parasites (5%). The most common viruse are rotavirus (in unvaccinated children), norovirus and adenovirus, and bacteria *Campylobacter and Salmonella enteritidis* (food poisoning). *Clostridium difficile* is a common cause of hospital and community-acquired infection, associated with antibiotics use.

Dehydration is a key problem. Laboratory and microbiological evaluation are reserved for children with a more severe presentation.

The first line treatment in children with mild to moderate dehydration according *to ESPGHAN* (*The European Society for Paediatric Gastroenterology Hepatology and Nutrition*) is oral rehydration with hypoosmolar rehydration solution. In children older than six months with mild dehydration diluted apple juice can be an option. Children with severe dehydration should be hospitalized and rehydrated *via* nasogastric tube or more often intravenously. The use od probiotics, Saccharomyces boulardi or Lactobacillus rhamnosus GG, in appropriate doses is recommended. Antibiotics are reserved for more severe bacterial infections. An early start with normal is recommended for most children.

Key words: acute infectious diarrhea, children, rehydration, probiotics

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DIJAGNOSTIKA INFEKTIVNIH OBOLJENJA GASTROINTESTINALNOG TRAKTA U BIOPSIJSKOM I AUTOPSIJSKOM MATERIJALU

DIAGNOSTICS OF INFECTIOUS DISEASES OF THE GASTROINTESTINAL TRACT IN BIOPSY AND AUTOPSY DAILY PRACTICE

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SAŽETAK

Infektivne bolesti gatrointestinalnog trakta (IBGIT) su jedan od najčešćih uzroka morbiditeta i mortaliteta u svetu. Prema podacima Svetske zdravstvene organizacije, oko 1,5 miliona ljudi umre smo zbog dijareje, mahom u zemljama sa lošim socioekonomskim uslovima. IBGIT mogu biti izazvane skoro svim tipovima mikoroorganizama (virusi, bakterije, gljivice i paraziti). S obzirom na to da su IBGIT često samo ograničavajuće i da je patohistološka (PH) slika često nespecifična, pacijenti sa sumnjom na IBGIT se retko bioptiraju. Primenom rutinskih bojenja (Hematoksilin & Eosin, Giemsa itd.) pojedini mikrobiološki uzročnici se prezentuju karakterističnom PH slikom, te je njihova dijagnostika deo svakodnevne biopsijske prakse. Primenom specijalnih histohemijskih i imunohistohemijskih bojenja, uz pomoć molekularnih metoda se infektivni uzročnici u pojedinim slučajevima mogu precizno identifikovati, čak iako je PH slika nespecifična. Takođe, velika dijagnostička uloga patologa ogleda se i u diferencijaciji IBGIT u odnosu na druge zapaljenske neinfektivne bolesti, koje često pokazuju vrlo sličnu PH sliku a iziskuju potpuno drugačiji terapijski pristup.

Ključne reči: biopsija, autopsija, histologija, patologija

ABSTRACT

Infectious diseases of the gastrointestinal tract (IDGIT) are one of the most common causes of morbidity and mortality in the world. According to World Health Organization data, about 1.5 million people die from diarrhea alone, mostly in countries with poor socioeconomic conditions. IDGIT can be caused by almost all types of microorganisms (viruses, bacteria, fungi and parasites). Given that IDGIT are often self-limiting and that the pathohistological (PH) picture is often nonspecific, patients with suspected IDGIT are rarely biopsied. Using routine stainings (Hematoxylin & Eosin, Giemsa, etc.), certain microbiological agents are presented with a characteristic PH picture, so their diagnosis is part of everyday biopsy practice. By applying special histochemical and immunohistochemical stainings, with the help of molecular methods, infectious agents can be accurately identified in some cases, even if the PH picture is non-specific. Also, the great diagnostic role of the pathologist is reflected in the differentiation of IDGIT in relation to other inflammatory non-infectious diseases, which often show a very similar PH picture and require a completely different therapeutic approach.

Key words: biopsy, autopsy, histology, pathology

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INFECTIONS IN NEPHROLOGY - MODERN APPROACH

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SAŽETAK

Infektivna stanja u nefrologiju predstavljaju veliku grupu raznorodnih kliničkih entiteta. Njihova zajednička karakteristika je da blagovremena dijagnostika i lečenje dovode do pozitivnog ishoda i smanjuju mogućnost nastanka komplikacija. Ispoljavanje ovih infekcija je različito i može biti u vidu : akutnog bubrežnog oštećenja, akutnog i hroničnog glomerulonefritisa, nefrotskog sindroma, nefritičkog sindroma, tubulointersticijskih nefritisa kao i rapido progresivnog glomerulonefritisa. Najčešći izazivči su bakterije, virusi, gljivice, a oštećenja koja izazivaju su direktna ili indirektna - imunološki posredovanim mehanizmima (glomerulonefritisi). U svakodnevnoj praksi najzastupljenija su infekcije urinarnog trakta (ITU). One mogu biti vezane za infekcije donjih i gornjih urinarnih puteva. Najčešće infekcije donjih urinarnih puteva su infekcije mokraćne bešike (cistitisi) koje se ispoljavaju kod više od 50% ženske populacije bar jednom u životu. Cistitis obično predstavlja nekomplikovanu infekciju, mada ponekad mogu biti komplikovane i dovesti do ascendentnog širenja sa razvojem akutnog pijelonefritisa (tubulointersticijskog oštećenja), a ponekad i uroseptičnih stanja. Od stanja koja pogoduju nastanku ITU treba istaći kakulozu i obstrukcije urinarnog trakta, vezikouretralni refluks, anatomske malformacije urinarnih puteva, imunokompromitovana stanja itd.). Kod pacijenata sa rekurentnim, ponavljajućim infekcijama ili uočenim rezistentnim klicama češće su komplikacije. Iako se izazivači infekcija razlikuju u zavisnosti da li ih susrećemo ambulantno, u hospitalnim uslovima ili u jedinicama intenzivne nege, ipak je najzastupljenija klica *Escherichia coli*, a u bolničkim uslovima i *Klebsiella* pneumoniae, *Proteus mirabilis, Pseudomonas aeruginosa*. Klinička slika cistitisa podrazumeva učestalo bolno mokrenje, osećaj nepotpunog pražnjenja, noćno mokrenje, nemogućnost zadržavanja mokrenja. Danas i pored moćnih antimikrobnih lekova kojima raspolažemo, ITU su česte i raspostranjene, a poseban problem je pojava rezistentnih klica usled neadekvatne upotrebe antibiotika. Novija istraživanja ukazuju da na rekurenciju i rezistenciju na antibiotike, utiče mikrobiom mokraćne bešike čiji je gen za otpornost vezan za prevagu zaštitne bakterijske flore nad virulencijom klica. Lečenje prve i izolovane infekcije je obično prema urinokulturi i antibiogramu, dok se kod rekurantnih infekcija uz antibiotike preporučuje povećani unos tečnosti, češće mokrenje, upotreba vaginaleta, antimikrobna profilaksa i intermitentno uzimanje antibiotika.

Kao komplikacija ITU, mogu nastati akutni pijelonefritis, hronični pijelonefritis, absces bubrega u težim situacijama ksantogranulomatozni bubreg i urosepsa. Nastanak akutnog pijelonefritisa koji predstavlja akutni tubulointersticijski nefritis je obično ascendentnim putem ili hematogeno i ispoljava se lumbalnim bolovima, temperaturom, groznicom, drhtavicom, bolnim i učestalim mokrenjem, često i pojavom hematurije. Lečenje akutnog pijelonefritisa može biti ambulantno (kod nekomplikovanih formi) ili bolnički (kod starijih, kod imuno-kompromitovanih, pacijenata, kod transpantiranog bubrega, slabije regulisanim dijabetesom itd). Osnovno lečenje je antibiotsko (obično inicijalno empirijski, iz kasniju korekciju prema antibiogramu i urinokulturi) uz antipiretike i analgetike. Od antbiotika obično se koriste cefalosporini (parenteralno kod komplikovanih slučajeva) ili fluorohinoloni, ponekad karbapenemi. Svakom pacijentu sa komplikovanom infekcijom treba planirati naknadna dopunska dijagnostička ispitivanja u cilju otkrivanja potencijalnih predisponirajućih abnormalnostii i prevencije ponovne infekcije.

Ključne reči : nefrologija, infekcije, pijelonefritis, antibiotici.

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ABSTRACT

Infectious conditions in nephrology represent a large group of heterogeneous clinical entities. Their common feature is that timely diagnosis and treatment lead to a positive outcome and reduce the possibility of complications. The manifestation of these infections is different and can be: acute kidney damage, acute and chronic glomerulonephritis, nephrotic syndrome, nephritic syndrome, tubulointerstitial nephritis, as well as rapidly progressive forms of glomerulonephritis. The most common causative agents are bacteria, viruses, fungi, and the damage they cause is direct or indirect through immune-mediated mechanisms (glomerulonephritis). In everyday practice, urinary tract infections (UTIs) are the most common. They can be related to lower and upper urinary tract infections. The most common lower urinary tract infections are bladder infections (cystitis), which occur in more than 50% of the female population at least once in their lives. Cystitis is usually an uncomplicated infection, although sometimes they can be complicated and lead to ascending spread with the development of acute pyelonephritis (tubulointerstitial damage), and sometimes uroseptic conditions. Of the conditions that favor the occurrence of ITU, we should highlight caculosis and urinary tract obstructions, vesicourethral reflux, anatomical malformations of the urinary tract, immunocompromised conditions, etc.). Complications are more common in patients with recurrent infections or observed resistant germs. Although the causative agents of infections differ depending on whether we encounter them on an outpatient basis, in hospital conditions or in intensive care units, the most common germ is Escherichia coli, and in hospital conditions also Klebsiella pneumoniae, Proteus mirabilis, Pseudomonas aeruginosa. The clinical picture of cystitis includes frequent painful urination, a feeling of incomplete emptying, nocturnal urination, inability to hold back urination. Today, despite the powerful antimicrobial drugs at our disposal, ITUs are frequent and widespread, and a special problem is the emergence of resistant germs due to the reckless use of antibiotics. Recent research shows that recurrence and resistance to antibiotic therapy is influenced by the bladder microbiome, whose resistance gene is associated with the dominance of the protective bacterial flora over the virulence of the germs. Treatment of the first and isolated infection is usually according to urine culture and antibiogram, while in case of recurrent infections, along with antibiotics, increased fluid intake, more frequent urination, use of vaginal suppositories, antimicrobial prophylaxis and intermittent use of antibiotics are recommended.

As a complication of ITU, acute pyelonephritis, chronic pyelonephritis, kidney abscess, and in more severe cases, xanthogranulomatous kidney and urosepsis can occur. The onset of acute pyelonephritis, which represents acute tubulointerstitial nephritis, is usually ascending or hematogenous and is manifested by lumbar pain, temperature, fever, chills, painful and frequent urination, often with the appearance of hematuria. Treatment of acute pyelonephritis can be outpatient (in uncomplicated forms) or in hospital (in elderly patients, immunocompromised patients, patients with transplanted kidneys, poorly regulated diabetes, etc.). The basic treatment is antibiotics (usually initially empirically, and later corrected according to the antibiogram and urine culture) along with antipyretics and analgesics. Antibiotics are usually cephalosporins (parenterally in complicated cases) or fluoroquinolones, sometimes carbapenems. Any patient with a complicated infection should be scheduled for follow-up additional diagnostic tests in order to detect potential predisposing abnormalities and prevent re-infection.

Key words: nephrology, infections, pyelonephritis, antibiotics.

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PROTOKOL LEČENJA AKUTNO TRAUMATIZOVANIH PACIJENATA SA KOVID-19 INFEKCIJOM

PROTOCOL FOR THE TREATMENT OF ACUTELY TRAUMATED PATIENTS WITH COVID-19 INFECTION

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SAŽETAK

Pandemija koronavirusa (KOVID-19) ugrozila je funkcionalnost zdravstvenih sistema širom sveta. Sa širenjem bolesti, zemlje su usvojile različite modele za reorganizaciju infrasturkture i preraspodelu resursa za borbu protiv pandemije. Sve medicinske usluge i intervencije koje nisu hitne su odložene. Ali su samo hitne službe i traumatske ustanove, nastavile da funkcionišu prema ustaljenim protokolima uz nekoliko izmena. Tokom pandemije, zbrinjavanje traumatizovanih pacijenata se zasniva na kliničkoj hitnosti, bezbednosti pacijenta, zdravstvenih radnika i očuvanju zdravstvenog sistema u celini. Strategija uključuje neoperativno lečenje ako je to moguće, ograničavanje broja zdravstvenih radnika koji učestvuje u lečenju, trijaža pacijenata, indikacija za operativni tretman i psihološki uticaj pandemije na pacijenta.

Ključne reči: protokol, trauma, Kovid

ABSTRACT

The coronavirus pandemic (COVID-19) has threatened the functionality of health systems around the world. As the disease spread, countries adopted different models for reorganizing infrastructure and redistributing resources to combat the pandemic. All non-emergency medical services and interventions are postponed. But only emergency services and trauma facilities continued to function according to established protocols with a few changes. During a pandemic, the care of traumatized patients is based on clinical urgency, the safety of the patient, healthcare workers, and the preservation of the healthcare system as a whole. The strategy includes non-operative treatment if possible, limiting the number of healthcare workers involved in treatment, patient triage, indications for operative treatment and the psychological impact of the pandemic on the patient.

Key words: protocol, trauma, Covid

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LEČENJE PACIJENATA SA TUMORIMA KOSTIJU I MEKIH TKIVA U USLOVIMA KOVID-19 EPIDEMIJE – ISKUSTVO INSTITUTA ZA ORTOPEDIJU "BANJICA"

TREATMENT OF PATIENTS WITH BONE AND SOFT TISSUE TUMORS DURING COVID-19 EPIDEMIC – EXPERIENCE OF INSTITUTE FOR ORTHOPAEDICS "BANJICA"

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SAŽETAK

Uvod: Institut „Banjica" je referentni centar u Srbiji za lečenje primarnih tumora kosti i mekih tkiva i sekundarnih depozita u muskuloskeletnom sistemu. U godinama pre početka epidemije prosečan broj operativno lečenih pacijenata na ovom polju bio je oko 700. Pandemija Kovid-19 značajno je uticala na organizaciju rada, posebno u smislu trijaže pacijenata, preoperativne pripreme i postoperativne nege i rehabilitacije. Cilj rada je prikaz iskustva u zbrinjavanja pacijenta obolelih od bolesti čije lečenje ne može biti značajno odlagano u uslovima pandemije.

Materijal i metode: Retrospektivna analiza kojom su obuhvaćena 472 pacijenta obolela od primarnih i sekundarnih tumora muskuloskeletnog sistema operativno lečena od strane ortopedskih hirurga Instituta „Banjica" tokom od marta 2020.godine do februara 2021.

Rezultati: Starosna dob bila je od 7 do 86 godina. Dijagnoze su bile primarni maligni mezenhimalni tumori kosti i mekih tkiva (97), benigni mezenhimalni tumori (85), tumorima slične promene kosti (78), sekundarni depoziti nesigurnog i nepoznatog porekla i patološki prelomi (154) i trauma kod onkoloških bolesnika (58). U Institutu „Banjica" urađeno je 426 operacija, a u drugim bolnicama u Srbiji 46.

Zaključak: Tokom prve godine pandemije Institut „Banjica" je nešto više od 5 meseci radio kao Kovid bolnica. U ovom periodu nisu lečeni ortopedski pacijenti, osim pacijenata sa muskuloskeletnim tumorima koje su hirurzi Instituta operativno zbrinjavali u drugim bolnicama. Pandemija je značajno uticala na postavljanje indikacija za neodložno hirurško lečenje, tako da su pacijenti sa benignim i tumorima sličnim promenama najčešće dugotrajno odlagani, a pacijenti sa malignim tumorima su podvrgavani rigoroznoj trijaži.

Ključne reči: tumor, sarkom, skeletne metastaze, Kovid

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ABSTRACT

Introduction: Institute "Banjica" is referral center in Serbia for treatment of primary bone and soft tissue tumors and secondary deposits in musculoskeletal system. Years before the epidemic average number of operatively treated patients in this field was around 700. Covid-19 pandemic had a great impact on organization, especially in ways of patient triage, preoperative preparation and postoperative care and rehabilitation. The aim of this paper is to present the experience in taking care of patients with diseases whose treatment cannot be significantly delayed.

Material and methods: Retrospective analysis included 472 patients with primary and secondary tumors of musculoskeletal system operatively treated by "Banjica" Institute`s surgeons from March 2020. until February 2021.

Results: Age of patients ranged 7 to 86 years. Diagnoses were primary mesenchimal tumors of bone and soft tissues (97), benign mesenchimal tumors (85), tumor-like lesions of bone (78), secundary deposits of uncertain or unknown origin and pathological fractures (154) and trauma in oncological patients (58). At Institute „Banjica" 426 operations were performed and 46 at other hospitals in Serbia.

Conclusion: During the first year of the pandemic Institute „Banjica" was a Covid hospital for more than five months. In this period orthopaedic patients were not treated, except patients with tumors of musculoskeletal tumors who were operated by Institute`s surgeons at other hospitals. The pantemic had a significan influence on setting the indication for immediate surgical treatment so the patients with benign and tumor-like lesons were long time delayed, and patients with malignant tumors were rigorously triaged.

Key words: tumor, sarcoma, skeletal metastases, Covid

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INFECTIONS IN THORACIC SURGERY - FROM PREVENTION TO REACTION

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SAŽETAK

Uvod. Opsežne grudnohirurške operacije često su praćene komplikacijama u vidu infekcija. Neki od uzroka koji mogu dovesti do životno ugrožavajućih stanja su porast broja multirezistentnih mikroorganizama, porast nozokomijalnih infekcija, povećan broj imunosuprimiranih pacijenata, nepravilna upotreba antibiotika, kao i starija životna dob pacijenata. Kroz prikaz onkološkog pacijenta, lečenog u našoj ustanovi od 2006. do 2022. godine ukazujemo na mogućnost pojave različitih komplikacija u ranom i kasnom postoperativnom toku, kao i na multidisciplinarni i pravovremeni pristup u zbrinjavanju istih koji dovodi do uspešnog lečenja čak i najkomplikovanijih grudnohirurških stanja.

Prikaz bolesnika. Kod pacijenta muškog pola, starosti 40 godina, 2006. godine učinjena je desnostrana 'sleeve' pneumonektomija zbog dokazanog planocelularnog karcinoma pluća. Rani postoperativni tok komplikovan je hemoragijom prvog postoperativnog dana i retorakotomijom sa povoljnim ishodom; lečenje nastavljeno adjuvantnom hemioterapijom. Petnaest godina kasnije, 2021. godine dolazi do pojave desnostranog empijema pleure tretiranog minimalno invazivnim hirurškim pristupom (VATS), a potom, 2022. godine dolazi do pojave pleurokutane i bronhopleuralne fistule, tretirane kreiranjem fenestre zida grudnog koša, a po stabilizaciji opšteg stanja i sanaciji infekcije, rekonstrukcijom zida grudnog koša flapom m.rectus abdominisa uz učešće plastičnog hirurga sa uspešnim ishodom.

Zaključak. Kroz prikaz pacijenta ukazujemo na širok spektar potencijalnih komplikacija koje se mogu javiti kod istog pacijenta u različitim vremenskim intervalima nakon proširenih grudnohirurških onkoloških operacija, kao što su krvarenje, rani empijem, kasni empijem, bronhopleuralna i pleurokutana fistula, kao i na značaj aktivnog, multidiciplinarnog i pravovremenog pristupa u rešavanju svih navedenih komplikacija, koji doprinosi uspešnosti lečenja i poboljšanju preživljavanja pacijenata.

Ključne reči: empijem, pleurokutana fistula, bronhopleuralna fistula, VATS, rekonstruktivna hirurgija

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ABSTRACT

Introduction. Extensive chest surgery is often accompanied by complications in the form of infections. Some of the causes that can lead to life-threatening conditions are the increase in the number of multiresistant microorganisms, the increase in nosocomial infections, the increased number of immunosuppressed patients, improper use of antibiotics, as well as the older age of patients. Through the presentation of an oncology patient, treated in our institution from 2006. to 2022., we point out the possibility of various complications in the early and late postoperative course, as well as the multidisciplinary and opportune approach which leads to the successful treatment of even the most complicated conditions in thoracic surgery.

Presentation of the patient. A 40-year-old male patient underwent a right-sided 'sleeve' pneumonectomy in 2006 due to proven squamous cell lung cancer. The early postoperative course is complicated by hemorrhage on the first postoperative day and retoracotomy with a favorable outcome; treatment continued with adjuvant chemotherapy. Fifteen years later, in 2021, a right-sided pleural empyema treated with a minimally invasive surgical approach (VATS) appeared, and then, in 2022, a pleurocutaneous and bronchopleural fistula appeared, treated by creating a chest wall fenestration. After stabilization of the patient and succesful treatment of infection, we did reconstruction of the chest wall with a *m.rectus abdominis* flap with the participation of a plastic surgeon with a successful outcome.

Conclusion. Through the presentation of the patient, we indicate a wide range of potential complications that can occur in the same patient at different time intervals after extended thoracic surgical oncological operations, such as bleeding, early empyema, late empyema, bronchopleural and pleurocutaneous fistula, as well as the importance of active, multidisciplinary and opportune approach in solving all the mentioned complications, which contributes to the success of treatment and improvement of patient survival.

Key words: empyema, pleurocutaneous fistula, bronchopleural fistula, VATS, reconstructive surgery

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INFEKTIVNE DERMATOZE - OD „NEVIDLJIVIH” UZROČNIKA DO PSEUDOTUMORSKIH LEZIJA

INFECTIOUS DERMATOSES – FROM ”INVISIBLE” CAUSES TO PSEUDOTUMOR LESIONS

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SAŽETAK

Učestalost infekcija kože i njihovih tipova (virusnih bakterijskih ili parazitarnih) varira u različitim delovima sveta, uzrasnim i socioekonomskim grupama, a poseban problem predstavljaju bolničke infekcije kože. Iako su ove infekcije česte u kliničkoj praksi, usled uglavnom jasne kliničke slike se retko bioptiraju. Histopatološka evaluacija infektivnih dermatoza je neophodna u nedovoljno jasnim slučajevima, ali su one ponekad i slučajan nalaz u biopsiji. Neke od ovih dermatoza, npr. infekcije Herpes Simplex ili Herpes Zoster virusima, imaju vrlo karakterisitčnu histološku sliku koja je dovoljna za etiološku dijagnozu, posebno u korelaciji sa kliničkom slikom. Druge infekcije ipak zahtevaju dopunska histohemijska ili imunohistohemijska bojenja kojima se identifikuju uzročnici, npr. u slučaju gljivičnih infekcija kože, sifilisa ili granulomatoznih zapaljenja uzrokovanih mikobakterijama. Dopunska bojenja i identifikacija infektivnih agenasa su od izuzetnog značaja u slučaju dermatoza sa oksudnom inflamacijom kakve su erythrasma ili infekcije gljivicama iz roda Malessezia. Naročit dijagnostički izazov predstavljaju pseudotumorske lezije koje simuliraju skvamocelularni karcinom kože ili sarkome: pseudoepiteliomatozna hiperplazija epiderma nastala na terenu hroničnih venskih ulceracija i infekcija kože i mikobakterijski vretenastoćelijski pseudotumor. Dijagnoza infektivnih dermatoza je ponekad izazov i zahteva integraciju kliničke i histopatološke slike sa rezultatima mikrobioloških analiza.

Ključne reči: infekcije kože, patohistologija, imunohistohemija

ABSTRACT

The incidence of skin infections and their subtypes (viral, bacterial, or parasitic) varies in different parts of the world and age- or socio-economic groups, while hospital skin infections represent a significant problem. Although such infections are frequent in clinical practice, they are rarely the reason for a biopsy due to clear clinical presentation. Histopathological evaluation of infectious dermatoses is necessary in unclear cases but they are sometimes incidental findings in the biopsy. Some dermatoses, e.g. Herpes Simplex or Herpes Zoster infections, have characteristic histological findings sufficient for etiological diagnosis, especially in correlation with clinical presentation. Other infections require additional histochemical or immunohistochemical stainings, e.i. in case of fungal skin infections, syphilis, or granulomatous mycobacterial inflammation. Additional staining and identification of infectious agents play important role in dermatoses with scarce inflammation such as erythrasma or Malessezia Spp. Fungal infections. Some pseudo-tumorous lesions simulating cutaneous squamous cell carcinoma or sarcoma are extremely challenging: pseudoepithelliomatous epidermal hyperplasia arising in chronic venous ulcers or skin infections, and mycobacterial spindle cell pseudotumor. Diagnosis of infectious dermatoses is sometimes challenging and requires the integration of all data on clinical presentation, histopathological findings, and results of microbiological analysis.

Key words: skin infection, histopathology, immunohistochemistry

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VIRAL SKIN INFECTIONS - A DIAGNOSTIC AND THERAPEUTIC CHALLENGE

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SAŽETAK

Bolest šaka-stopalo-usta je često akutno oboljenje, najčešće dečijeg uzrasta, sa karakterističnim vezikulama u usnoj duplji, na šakama i stopalima. Može da dostigne epidemijske razmere sa ozbiljnim, potencijalno fatalnim komplikacijama (plućni edem, meningoencefalitis). Oboljenje izazivaju enterovirusi, najčešće koksaki A16 (CVA16) i humani enterovirus 71 (EV71), ređe koksaki A4-7, A9, A10, B1-3 i B5. Atipična forma bolesti je u vezi sa CVA16. Javlja se tokom zimskog perioda, a mogu se razviti veoma ekstenzivne bulozne lezije sa sistemskim manifestacijama.

Condylomata acuminata su humanim papiloma virusom (HPV) indukovane lezije anogenitalnog trakta i jedna od najčešćih seksualno prenosivih bolesti. Predstavlja najčešći tip vidljive HPV infekcije anogenitalne regije dece mlađe od 4 godine. Deca sa atopijskim dermatitisom (AD) su posebno osetljiva na HPV infekciju. Kod dece put transmisije nije jasan kao kod odraslih (seksualna transmisija). Infekcija se može preneti seksualnim i neseksualnim putem. Kod mlađih od 4 godine neseksualni kontakt je češći. Moguća je perinatalna i postnatalna transmisija koja uključuje: vertikalnu transmisiju (najčešće kod dece mlađe od 2 god) i horizontalnu transmisiju (auto i heteroinokulacija).

Eczema herpeticum je najozbiljnija komplikacija infekcije herpes simplex virusom (HSV). Javlja se kod dece i odraslih sa AD. Rizik za HSV je udružen sa mutacijom gena koji kodira filagrin, strukturni protein kornealnog sloja. Može se javiti i kod drugih oboljenja sa oštećenjem barijere kože (Kaposi varicelliform eruption). Karakteriše se naglom pojavom tipičnih sitnih erozija sa hemoragičnom krustom. Može biti praćen febrilnošću, limfadenopatijom, a moguće su i teške komplikacije (herpetički keratitis sa slepilom, otkazivanje organa i smrtni ishod).

Ključne reči: bolest šaka-stopalo-usta, condylomata acuminata, eczema herpeticum, enterovirusi, herpes simplex virus, humani papilloma virusi.

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ABSTRACT

Hand-foot-and-mouth disease is common an acute disease, most often in children, with characteristic vesicles in the mouth, hands and feet. It can reach epidemic proportion with severe, potentially fatal complications (pulmonary edema, meningoencephalitis). The disease is caused by enteroviruses, most often coxsackie A16 (CVA16) and human enterovirus 71 (EV71), less often coxsackie A4-7, A9, A10, B1-3 and B5. The atypical form of the disease is related to CVA16. It occurs during the winter, and extensive bullous lesions with systemic manifestations can develop.

Condylomata acuminata are human papillomavirus (HPV)-induced lesions of the anogenital region and one of the most common sexually transmitted diseases. It represents the most common type of visible HPV infection of the anogenital region of children under 4 years old. Children with atopic dermatitis (AD) are particularly susceptible to HPV infection. In children, the route of transmission is not as clear as in adults (sexual transmission). In children younger than 4, non-sexual contact is more common. Perinatal and postnatal transmission is possible, which includes: vertical transmission (most often in children younger than 2 years) and horizontal transmission (auto and heteroinoculation).

Eczema herpeticum is the most serious complication of herpes simplex virus (HSV) infection. It occurs in children and adults with AD. The risk for HSV is associated with a mutation in the gene encoding filaggrin, a structural protein of the corneal layer. It can also occur in other diseases with damage of the skin barrier (Kaposi varicelliform eruption). It is characterized by the sudden appearance of typical small erosions with a hemorrhagic crust. It can be accompanied by fever, lymphadenopathy, and severe complications are possible (herpetic keratitis with blindness, organ failure and fatal outcome).

Key words: hand-foot-and-mouth disease, condylomata acuminata, eczema herpeticum, enteroviruses, herpes simplex virus, human papilloma viruses.

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BACTERIAL SKIN INFECTIONS - A DIAGNOSTIC AND THERAPEUTIC CHALLENGE

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SAŽETAK

Bakterijske infekcije predstavljaju grupu najčešćih dermatoloških stanja koje čine oko 20% svih dermatoloških pregleda.

Obezbeđujući mehaničku barijeru sa koje se kontaminirajući mikroorganizmi kontinuiorano uklanjaju deskvamacijom, ali i produkcijom antimikrobnih peptide, koža omogućava održavanje unutrašnje homeostaze. Poremećaj kompleksnog odnosa ravnoteže između domaćina i mikroorganizama može dovesti do infekcija kože, u čiju odbranu su uključeni adaptivni i urođeni imunološki odgovor u međusobnoj interakciji.

Normalnu mikrobiotu kože čini ogroman broj bakterija kao što su aerobne koke, aerobne i anaerobne korineformne bakterije i gram-negativne bakterije, koje žive kao komensali na površini kože i unutar folikula dlake. Prekomerni rast nekih od ovih rezidentnih organizama koji čine rezidentnu kutanu floru, može izazvati različite vrste infekcija. Takođe, i bakterije koje se uobičajeno ne nalaze na površini kože mogu kolonizirati epidermis i dovesti do infekcije. Najveći broj bakterijskih infekcija kože izazivaju bakterije iz roda stafilokoka i streptokoka u različitim kliničkim formama, od lokalizovanih infekcija kao što su impetigao i celulitis do teških multisistemskih poremećaja. Takođe, i druge gram-pozitivne i gram-negativne bakterije mogu biti uzrok širokog spektra lokalizovanih i diseminovanih kožnih manifestacija kao deo sistemskskih bakterijskih infekcija ili različitih imunodeficijentnih stanja.

Bakterijske infekcije se klinički dele prema mestu, dubini, obimu infekcije i uzročniku. Pravovremeno prepoznavanje, adekvatna dijagnostika i lečenje bakterijskih infekcija kože kao veoma čestih i prenosivih dermatoloških stanja od velikog je značaja za opšte zdravlje. Ovo predavanje daje pregled različitih kliničkih formi kutanih infekcija, njihovog lečenja i potencijalne prevencije.

Ključne reči: bakterijske infekcije, klinička prezentacija, terapija

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ABSTRACT

Bacterial infections represent one of the most common dermatological conditions that account for ~20% of dermatology visits.

Providing a mechanical barrier from which contaminating organisms are constantly being removed by desquamation and producing antimicrobial peptides skin enables the maintenance of an internal environment of homeostasis. Disruption of the delicate balance between host and microorganisms can result in skin infections that involve interrelated adaptive and innate immune systems.

The normal skin microbiota is composed of huge numbers of bacteria like aerobic cocci, aerobic and anaerobic coryneform bacteria, and Gram-negative bacteria, that live as commensals on its surface and within its follicles. Overgrowth of some of these resident organisms may cause different types of skin infections. Likewise, bacteria not normally found there may colonize the epidermis and lead to infection. Staphylococci and streptococci cause most bacterial skin conditions, which range from common infections such as impetigo and cellulitis to severe multisystem disorders. Also, other Gram-positive and Gram-negative bacterial infections have a wide variety of localized and widespread cutaneous manifestations that could represent signs of a systemic bacterial infection or underlying immunodeficiency.

The nomenclature of cutaneous bacterial infections reflects the site, depth, and extent of the infection as well as the organism involved. Timely recognition, adequate diagnosis, and treatment of bacterial infections as very common and transmissible dermatological conditions are of great importance for general national health. This lecture reviews several different clinical presentations of skin infections, treatment, and potential prevention.

Kew words: bacterial infections, clinical presentation, therapy

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FUNGAL SKIN INFECTION – A DIAGNOSTIC AND THERAPEUTIC CHALLENGE

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SAŽETAK

Gljivične infekcije kože se dele na tri oblika: superficijalne, supkutane i sistemske. Dermatofitoze, pityriasis versicolor i kutana kandidijaza su uobičajene superficijalne gljivične infekcije kože, koje karakteriše invazija samo na nivou *stratum corneum* epidermisa, kose i nokta. Supkutane gljivične infekcije kože (hromoblastomikoza, micetom i sporotrihoza) obično su rezultat implantacije mikroorganizma u dermis ili supkutis. Sistemske gljivične infekcije mogu biti uzrokovane "pravim" ili oportunističkim patogenima. Dermatomikoze su uzrokovane filamentoznim gljivama kao što su vrste *Trichophyton*, *Microsporum* i *Epidermophyton*. Zlatni standard za dijagnostikovanje gljivičnih infekcija kože je direktna mikroskopija i kultura skarifikata skvame, kosa ili nokti, a definitivna dijagnoza je poželjna pre početka lečenja, posebno kod primene sistemske terapije. Mnoge vrste molekularnih bioloških tehnika su nedavno postale dostupne za kliničku dijagnostiku i skoro sve ove tehnike uključuju lančanu reakciju polimeraze (PCR). Onihomikoze predstavljaju izazov za lečenje, pre svega zbog poteškoća u dijagnostici, potrebi za dugim periodom lečenja, eventualnim potencijalnim neželjenim efektima sistemske terapije i čestih recidiva. Međutim, zbog nedostatka ažuriranih nacionalnih ili međunarodnih smernica za lečenje *tinea corporis*, *tinea cruris*, *tinea pedis* i *tinea capitis*, lečenje sistemskim antimikoticima je često empirijsko. Antigljivični agensi za dermatomikoze su uglavnom inhibitori biosinteze ergosterola, osim grizeofulvina. Tri različita tipa inhibitora biosintetskog puta ergosterola su se pokazala efikasnim u kliničkoj praksi: azoli (npr. lokalni mikonazol i topikalni/oralni ketokonazol, itrakonazol i flukonazol), alilamini (npr. terbinafin) i morfolini (amorolfin).

Ključne reči: dermatomikoze, antimikotici, onihomikoze

ABSTRACT

Cutaneous fungal infections are divided among 3 forms: superficial, subcutaneous, and systemic. Dermatophytoses, *pityriasis versicolor*, and cutaneous candidiasis are common superficial mycoses, which are characterized by invasion of only the *stratum corneum*, hair, and nails. Subcutaneous mycoses (*chromoblastomycosis*, *mycetoma*, and *sporotrichosis*) typically result from implantation of the organism into the dermis or subcutis. Systemic mycoses may be caused by “true” or opportunistic pathogens. Dermatomycoses are caused by filamentous fungi such as *Trichophyton, Microsporum or Epidermophyton* species. The gold standard for diagnosing cutaneous fungal infections is microscopy and culture of scale, hair or nail, and a definite diagnosis is desirable before commencing treatment, especially with oral therapy. Many kinds of molecular biologic techniques have been made available for clinical diagnosis recently; almost all of these techniques involve the polymerase chain reaction (PCR). Onychomycosis can be challenging to manage due to difficulties in diagnosis, the requirement for long treatment periods, potential side effects of systemic medications, and frequent recurrences. However, due to the lack of updated national or international guidelines on the management of tinea corporis, cruris, pedis, and capitis treatment with systemic antifungals is often empirical. The antifungal agents for dermatomycoses are mainly inhibitors of ergosterol biosynthesis, except for griseofulvin. Three different types of inhibitors of the ergosterol biosynthetic pathway have been proven to be effective in clinic: the azoles (e.g. topical miconazole and topical/oral ketoconazole, itraconazole and fluconazole), the allylamines (e.g. terbinafine) and morpholines (amorolfine).

Key words: dermatomycoses, antimycotics, onychomycosis

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LEČENJE TENDINOPATIJA U POST KOVID SINDROMU

TREATMENT OF TENDINOPATHY IN POST COVID SYNDROME

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SAŽETAK

Uvod: Tendinopatije predstavljaju degenerativne ili zapaljenske promene tetiva i njihovih ovojnica. Klinička slika se karakteriše bolovima pri pokretu ili palpatornom osetljivošću na mestu promene. Tendinopatije nastaju kao moguće komplikacije kod pacijenta koji su preležali infekciju Covid 19. U periodu od 1.09 2021 do 30.09 2022 lečeno je ukupno 13 pacijenata zbog tendinopatije koja je nastala tri do šest meseci po prestanku lečenja infekcijom Covid 19. Istraživanje je sprovedeno u specijalističkoj ordinaciji za fizikalnu medicinu i rehabilitaciju "Physical" u Beogradu Pacijenti su bili upućeni na lečenje od strane lekara opšte medicine ili ortopeda. Dijagnoza je potvrđena kliničkom slikom, objektivnim nalazom, ultrazvučnim pregledom i laboratorijskim analizama. Fizikalna terapija je bila individulano dozirana, precizno aplikovana na mestu tegoba. Primenjeni su svi fizijalni agesni uz poštovanje kontraindikacija. Posena pažnja je data kineziterapiji, koja je bila individulano dozirana sa manjim brojem ponavljanja i laseroterapiji koja je bila aplikovana na mestu bola.

Cilj: rada je bio da se izleči postojeća tendinopatija i pacijent osposobi za dnevne aktivnosti bez tegoba. Svi pacijenti su lečeni kombinovanom fizikalnom terapijom. Prema kliničkoj slici pacijenti su imali tendinopatije Ahilove tetive, m. deltoideusa, mišića lopatične regije kao i mišića ekstenzora šake. Svi pacijenti su imali tri serije po deset aplikacija fizikalnih agenasa prema redosledu davanja.

Zaključak: Pacijenti posle fizikalne završene terapije imali su znatno poboljšanje tegoba, što je pokazano subjektivnim stavom pacijenta, kliničkim pregledom i kontrolnim ultrazvukom.

Ključne reči: tetive, post kovid sindrom, fizikalna terapija

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ABSTRACT

Introduction: Tendinopathy represents degenerative or inflammatory changes in the tendons and their sheaths. The clinical picture is characterized by pain during movement or palpation sensitivity at the site of the change. Tendinopathy occurs as a possible complication in patients who have been infected with Covid 19. In the period from September 1, 2021 to September 30, 2022, a total of 13 patients were treated for tendinopathy that occurred three to six months after the end of treatment with Covid 19. The research was conducted in a specialist office for physical medicine and rehabilitation "Physical" in Belgrade. Patients were referred for treatment by general medicine doctors or orthopedists.

The diagnosis was confirmed by the clinical picture, objective findings, ultrasound examination and laboratory analyses. Physical therapy was individually dosed, precisely applied to the site of the problem. All physical agents were applied while respecting contraindications. Particular attention was paid to kinesitherapy, which was individually dosed with fewer repetitions, and to laser therapy, which was applied to the site of pain. The aim of the work was to cure the existing tendinopathy and enable the patient to perform daily activities without discomfort. All patients were treated with combined physical therapy. According to the clinical picture, the patients had tendinopathies of the Achilles tendon, m. deltoideus, muscles of the scapular region as well as hand extensor muscles. All patients had three series of ten applications of physical agents according to the order of administration.

Conclusion: After physical therapy, patients had a significant improvement in their complaints, which was shown by the patient's subjective attitude, clinical examination and control ultrasound.

Key words: tendons, post covid syndrome, physical therapy.

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REHABILITACIJA RESPIRATORNOG SISTEMA KOD PACIJENATA SA POSTKOVID SINDROMOM

THE RESPIRATORY SYSTEM REHABILITATION IN PATIENTS WITH POST -COVID SYNDROME

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SAŽETAK

COVID-19 (bolest izazvana korona virusom 2019) predstavlja globalni zdravstveni problem jer je pandemija zahvatila gotovo sve zemlje sveta. Kliničke manifestacija se kreću od blagih i gotovo asimptomatskih oblika bolesti, pa do teških, životno ugrožavajućih, praćenih respiratornom insuficijencijom, sepsom, septičkim šokom i multiorganskom disfunkcijom. Nakon preležane bolesti, naročito težih oblika, moguće je zaostajanje sekvela u vidu restriktivne bolesti pluća sa teškom fibrozom, smanjenje difuzionog plućnog kapaciteta i sveukupno opadanje kvaliteta života. Pacijenti koji se oporave od COVID-19 nakon boravka na intenzivnoj nezi neophodno je da se podvrgnu plućnoj rehabilitaciji. U početku to je individualni pristup koji se nastavlja nakon otpusta iz bolnice kako bi se ublažile posledice postkovid sindroma. Neophodno je da plućnu rehabilitaciju ovih pacijenata sprovodi multidisciplinarni tim. Počinje se sa vežbama niskog do umerenog intenziteta. Pre otpusta iz bolnice, mora se proceniti potreba za korišćenjem kiseonika (kako u mirovanju, tako i tokom fizičkog napora). Kod pacijenata koji imaju tahikardiju, neophodno je sprovoditi intervalni trening sa pauzama. Rehabilitacija se sastoji prvenstveno od aerobnog treninga (stacionaran bicikl i pokretna traka), a vežbe se uključuju u program kada kod pacijenta primetimo stabilizaciju svih parametara. Sve vreme se intervalni trening sprovodi pod kiseonikom od 1-2 L/min, bez obzira na početne vrednosti saturacije. Na početku i kraju treninga neophodno je izmeriti saturaciju kiseonikom i srčanu frekvencija, koja predstavljaju glavne parametre koji nam pokazuju kako je stanje pacijenta. Tokom vremena dolazi do stabilizacije srčane frekvencije i saturacije kiseonikom. Kada se pomenute vrednosti stabilizuju, smanjuje se kiseonik na 1 L/min ili se potpuno isključuje a trening se sprovodi bez kiseoničke podrške.

Ključne reči: rehabilitacija, multidisciplinarni pristup, vežbe niskog intenziteta, aerobni trening, saturacija kiseonikom

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ABSTRACT

COVID-19 (corona virus disease of 2019) represents a global health problem because the pandemic has affected almost all countries of the world. Clinical manifestations range from mild and almost asymptomatic forms of the disease to severe, life-threatening, accompanied by respiratory insufficiency, sepsis, septic shock and multiorgan dysfunction. After a long illness, especially severe forms, it is possible to delay the sequelae in the form of restrictive lung disease with severe fibrosis, a decrease in diffusion lung capacity and an overall decrease in the quality of life. Patients who recover from COVID-19 after a stay in intensive care unit must undergo pulmonary rehabilitation. Initially, it is an individual approach that continues after discharge from the hospital in order to alleviate the post-covid syndrome consequences. It is necessary that the pulmonary rehabilitation of these patients is carried out by a multidisciplinary team. They move with low to moderate intensity exercises. Before discharge from the hospital, the need for oxygen use (both at rest and during physical exertion) must be assessed. In patients who have tachycardia, it is necessary to carry out interval training with breaks. Rehabilitation consists primarily of aerobic training (stationary bicycle and treadmill), and exercises are included in the program when the patient shows stabilization of all parameters. All the time, interval training is carried out under oxygen of 1-2 L/min, regardless of the initial saturation values. At the beginning and the end of the training, it is necessary to measure oxygen saturation and heart rate, which are the main parameters showing us how the patient is doing. Over time, stabilization of heart rate and oxygen saturation occurs. When the mentioned values are stabilized, the oxygen is reduced to 1 L/min or turned off completely and the training is carried out without oxygen support.

Key words: rehabilitation, multidisciplinary approach, low-intensity exercises, aerobic training, oxygen saturation

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PRIMENA LASEROTERAPIJE KOD ENTEZOPATIJA U POSTKOVID SINDROMU

APPLICATION OF LASER THERAPY IN ENTHESOPATHY IN POST-COVID SYNDROME

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SAŽETAK

Uvod: Iako je COVID-19 primarno respiratorna infekcija ona može da ima multisistemska
oštećenja i kliničke manifestacije.
Cilj narativnog pregleda i sinteze relevantnih literaturnih podataka je da istakne značaj
mišićno skeletnih manifestacija koje prate COVID-19 infekciju i ukaže na značaj primene lasera male snage u lečenju entezopatija.
Metod: Pretraživanje baze podataka *PubMed, Scopus,*
Rezultati i zaključak: Mišićno skeletne manifestacije su prisutne u 15,5 slučajeva COVID-19 infekcije, a u populaciji pacijenta koji su hospitalno lečeni, prisutne su u 30% slučajeva. Najčešće su to mialgije, artralgije i tendinopatije. Mehanizam nastanka nije dovoljno poznat ali se smatra da mogu biti posledica direktne virusne infekcije, kao i indirektnih mehanizama poput mišićno skeletnih oštećenja usled inflamacije, produženog inaktiviteta i nakon primene terapije poput alfa i beta interferona, ribavirina, kortkosteroida. Mišićno skeletni simptomi mogu da traju i nakon oporavka od COVID-19, a najčešće tegobe uključuju umor, bol u leđima, artralgiju, mialgiju, spinalni bol i tendinopatije. Rehabilitacija može poboljšati uporne mišićno skeletne simptome, a sastoji se od kineziterapije i primene fizikalnih agenasa sa specifičnim delovanjem. Fizikalni agens koji se često koristi u tretmanu mišićno skeletnih oštećenja je laser male snage, koji pokazuje umerene povoljne efekte. Laser male snage redukuje proinfalmatorne medijatore poput IL-1 β, IL-6 i TNF-α, pospešuje regeneraciju tkiva i smanjuje taloženje kolagena. Efekti lasera su posledica fotohemisjke reakcije koja se događa nakon apsorpcije fotona od strane fokoakceptora poput citohrom C oksidaze, opsina i porasta kalcijumovih jona što dovodi do povećane sinteze mRNK i proliferacije ćelija.

Ključne reči: COVID-19, entezopatije, laser male snage

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ABSTRACT

Introduction: Although COVID-19 is primarily a respiratory infection, it can hav multisystem damage and clinical manifestations.
Aim: The narrative review and synthesis of relevant literature data aim to highlight the importance of musculoskeletal manifestations accompanying COVID-19 infection and to point out the importance of using low-power lasers in treating enthesopathy.
Method: PubMed, Scopus database search,
Results and conlusion: Musculoskeletal manifestations are present in 15.5 cases of COVID 19 disease, and in the population of patients treated in hospitals, they are present in 30% of cases. The most common are myalgias, arthralgia, and tendinopathies. The mechanism of its occurrence is not sufficiently known. Still, it is believed that it may result from a direct viral infection and indirect mechanisms such as musculoskeletal damage due to inflammation, prolonged inactivity, and after using therapy such as alpha and beta interferon, ribavirin, and corticosteroids. Musculoskeletal symptoms can persist even after recovery from COVID-19, and the most common complaints include fatigue, back pain, arthralgia, myalgia, spinal pain, and tendinopathies. Rehabilitation can improve persistent musculoskeletal symptoms, especially enthesopathy, and consists of kinesitherapy and applying physical agents with specific action. A physical agent often used to treat musculoskeletal injuries is a low power laser with moderately favorable effects.The low power laser reduces proinflammatory mediators such as IL-1 β, IL-6, and TNF-α promotes tissue regeneration and reduces collagen deposition. Thlaser's effects result fromof a photochemical reaction that occurs after photon absorption by photo acceptors such as cytochrome C oxidase, opsin, and an increase in calcium ions, which leads to increased mRNA synthesis and cell proliferation.

Key words: COVID-19, enthesopathy, low power laser

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METODE KOMPLEMENTARNE MEDICINE U LEČENJU PACIJENATA SA POSTKOVID SINDROMOM

METHODS OF COMPLEMENTARY MEDICINE IN THE TREATMENT OF PATIENTS WITH POST-COVID SYNDROME

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SAŽETAK

Oko 30% pacijenata koji su imali infekciju virusom SARS-CoV-2 ima dugotrajne tegobe i posle završetka akutne faze bolesti. Najčešći su hronični zamor, skraćen dah, kognitivni problemi. . . U lečenju ovih pacijenata preporučuje se timski, individulano prilagođen, pristup usmeren i na fizičke i na psihičke aspekte ovog stanja Najčešći modaliteti komplementarne medicine koji koriste ovi pacijenti su vitaminski suplementi (vitamini C i D), probiotici i akupunktura.

Vitamin C (askorbinska kiselina i askorbat) ima antioksidantno, antiinflamatorno i imunomodulišuće delovanje kao i ulogu u zaštiti i obnovi endotela krvnih sudova. Pokazano je da visoke doze i.v datog vitamina C mogu biti efikasne u tretmanu zamora kod malignih pacijenata, dok su ispitivanja vezana za postkovid pacijente u toku. Za sada nema dokaza o efikasnosti oralno uzetog vitamina C u tretmanu postkovid simptoma.

Dokazana je veza između hipovitaminoze vitamnina D i težine respiratornog oboljenja i mortaliteta kod akutno obolelih od kovida (imunomodulatorna uloga). Dosadašnja istraživanja nisu dokazala njegovu efikasnost u tretmanu simptoma postkovid sindroma.

Gubitak diverziteta mikrobiote creva povezana je sa poremećajima osovine crevo-mozak (iritabilni kolon, emocionalna oboljenja), a kod pacijenata tokom infekcije SARS-CoV-2 virusom može biti jedan od prediktora težine oboljenja. Još uvek nema sigurnih dokaza o ulozi mikrobiote creva u tretmanu simptoma postkovid sindroma.

Akupunktura ima analgetsko, imunomodulišuće i neuroregulativno delovanje, koje se ostvaruje putem oslobađanja brojnih neurotransmitera u CNS-u. Pretpostavljeni mehanizmi delovanja akupunkture u tretmanu postkovid sindroma uključuju regulaciju balansa autonomnog nervnog sistema (posebno tonusa n.vagusa), regulaciju hronične inflamacije i produkcije citokina, regulaciju oksido-reduktivnih procesa (odnos NO i ROS) i poboljšanje mikrocirkulacije.

Ključne reči: postkovid, vitamin C, vitamin D, probiotici, akupunktura

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ABSTRACT

About 30% of patients who have been infected with the SARS-CoV-2 virus have long-term problems even after the acute phase of the disease has ended. The most common are chronic fatigue, shortness of breath, cognitive problems... In the treatment of these patients, a team-based, individually adjusted approach focused on both the physical and psychological aspects of this condition is recommended. The most common modalities of complementary medicine used by these patients are vitamin supplements (vitamins C and D), probiotics and acupuncture.

Vitamin C (ascorbic acid and ascorbate) has antioxidant, anti-inflammatory and immunomodulating effects, as well as a role in protecting and restoring the endothelium of blood vessels. It has been shown that high doses of IV vitamin C can be effective in the treatment of fatigue in malignant patients, while trials related to post-covid patients are ongoing. So far, there is no evidence of the effectiveness of oral vitamin C in the treatment of post-covid symptoms.

The link between vitamin D hypovitaminosis and the severity of respiratory disease and mortality in acutely ill patients with covid (immunomodulatory role) has been proven. Previous research has not proven its effectiveness in the treatment of post-covid syndrome symptoms.

The loss of gut microbiota diversity is associated with disorders of the gut-brain axis (irritable colon, emotional illnesses), and in patients during SARS-CoV-2 virus infection, it can be one of the predictors of the severity of the illness. There is still no definite evidence about the role of gut microbiota in the treatment of post-covid syndrome symptoms.

Acupuncture has an analgesic, immunomodulating and neuroregulatory effect, which is realized through the release of numerous neurotransmitters in the CNS. The supposed mechanisms of action of acupuncture in the treatment of post-covid syndrome include the regulation of the balance of the autonomic nervous system (especially the tone of the vagus nerve), the regulation of chronic inflammation and cytokine production, the regulation of redox processes (the ratio of NO and ROS) and the improvement of microcirculation.

Key words: post-covid, vitamin C, vitamin D, probiotics, acupuncture

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DIJAGNOSTIČKI ZNAČAJ MAGNETNE REZONANCE KOD INFEKTIVIH BOLESTI SRCA

DIAGNOSTIC VALUE OF MAGNETIC RESONANCE IMAGING IN INFECTIVE HEART DISEASES

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SAŽETAK

Infektivne bolesti srca se pojavljuju sve češće kao glavni uzrok hospitalizacije bolesnika sa kardiovaskularnim bolestima. Zapaljenje srčanog mišića, miokarditis se karakteriše prisustvom inflamatornog substrata i visokim rizikom od slabljenja srčane funkcije i pojave dugotrajanog efekta na stanje srčanog mišića. Dosadašnje iskustvo i stečeno znanje je pokazalo da disfunkcija leve komore, srčana insuficijencija i pojava aritmije su povezani sa lošijom prognozom. U nastanku miokarditisa mogu da učestvuju različiti agensi, uključujući virusne infekcije i toksine, a u skorije vreme je povećan interes zbog uticaja COVID 19 infekcije.

Magnetna rezonanca srca (MR) je neinvazivna dijagnostički procesa koja se pouzdano koristi u evaluaciji pacijenata sa miokarditisom. Broj ovih pacijenata je u stalnom porastu i uticao je na povećanje broja pacijenata koji se pregledaju magnetnom rezonancom. Ovom tehnikom mogu da se procene karakteristike koje ne mogu da se dobiju drugim dijagnostičkim procedurama: inflamatorna hiperemija i edem, nekroza/ožiljak u vidu late gadolinium enhancement, kao i drugi parametri kao što su poremećaji kontraktilnosti, prisustvo perikardnog izliva. Ukoliko su prisutna dva od ovih kriterijuma, prema Lake Louise kriterijumima, nalaz MR srca ukazuje na aktivnu inflamaciju srčanog mišića. U novije vreme, pored ovih konvencionalnih tehnika, počele su da se primenjuju i kvantitativne tehnike, T1 i T2 kao i procene ekstracelularnog volumena koje omogućuju precizniju kvantifikacija edema i fibroze miokarda. Obe tehnike su se pokazale kao pouzdani dijagnostički pokazatelji akutnog miokarditisa i omogućuju objektivnu procenu srčanog mišića.

Imajući u vidu navedeno, MR srca pruža važne informacije o stanju srčanog mišića koje su bitne za evaluaciju pacijenata sa inflamatornim promenama srca.

Ključne reči: Magnetna rezonanca srca, miokarditis, prognoza

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ABSTRACT

Infectious heart diseases appear more frequently as the main cause of hospitalization of patients with cardiovascular diseases. Inflammation of the heart muscle, myocarditis is characterized by the presence of an inflammatory substrate and a high risk of long-term effect on the heart muscle. It has been shown that left ventricular dysfunction, heart failure and the occurrence of arrhythmia are associated with a worse prognosis. Different agents can be involved in the development of myocarditis, including viral infections and toxins, and more recently interest has increased due to the impact of the COVID 19 infection.

Cardiac magnetic resonance (CMR) is a non-invasive diagnostic procedure that is reliably used in the evaluation of patients with myocarditis. With this technique, characteristics that cannot be obtained by other diagnostic procedures can be evaluated: inflammatory hyperemia and edema, necrosis/scar in the form of late gadolinium enhancement, as well as other parameters such as regional wall motion abnormalities, presence of pericardial effusion. If two of these criteria are present, according to the Lake Louise criteria, these findings are indicative of active myocardial inflammation. Recently, additional, quantitative techniques, T1 and T2, as well as extracellular volume assessments were introduced in clinical practice, which enable more precise quantification of myocardial edema and fibrosis. Both techniques have proven to be reliable diagnostic indicators of acute myocarditis and enable an objective assessment of the heart muscle.

Considering the above, cardiac MR provides important information about the state of the heart muscle, which is essential for the evaluation of patients with myocarditis and associated conditions.

Key words: Magnetic resonance of heart, myocarditis, prognosis

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UPOTREBA ANTIBIOTIKA U TERAPIJI AKUTNOG OTITIS MEDIA

ANTIBIOTICS IN THE THERAPY OF ACUTE OTITIS MEDIA

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SAŽETAK

Akutno zapaljenje srednjeg uva je najčešća infekcija u dečijem uzrastu zbog koje se prepisuju antibiotici. Nastaje kao posledica infekcije gornjih disajnih puteva virusne ili bakterijske etiologije. Najčešći bakterijski uzročnik je *Streptococcus pneumoniae*. Ostali uključuju *Haemophilus influenzae, Moraxellu catarrhalis i Streptococcus pyogenes. Prilikom prepisivanja antibiotika treba voditi računa da li je dete starije od dve godine, da li ide u kolektiv, da li je u skorije vreme uzimalo antibiotike, kao i da li postoji pridružena bolest. Kod dece koja nisu bila bolesna u poslednjih mesec dana, primenjuje se sistem „gledaj i prati„, gde se u prvih 48 sati savetuje samo primena analgetika. Antibiotike treba davati deci ispod dve godine starosti sa simptomima akutnog otitisa, kao i deci sa gnojnom supuracijom iz uva i perforiranom bubnom opnom. Kao prva linija terapije koristi se Amoxycilin i Amoxycilin/clavulanate. Kao drugu liniju terapije koristimo cefalosporine druge i treće generacije.* Pojava recidiva bolesti i rezistencije na antibiotike posledica su njihove široke primene, koja pospešuje kolonizaciju bakteriju u sluznici nazofarinksa i menja protektivnu fiziološku floru sluznice.

Ključne reči: otitis media – microbiology, drug therapy, clinical practical guidelines, antibiotic treatment, children.

ABSTRACT

Acute inflammation of the middle ear is the most common infection in children for which antibiotics are prescribed. It occurs as a result of an upper respiratory tract infection of viral or bacterial etiology. The most common bacterial cause is Streptococcus pneumoniae. Others include Haemophilus influenzae, Moraxella catarrhalis and Streptococcus pyogenes. When prescribing antibiotics, it should be taken into account whether the child is older than two years, whether he goes to a kindergarten, whether he has recently taken antibiotics, as well as whether there is an associated disease. For children who have not been in pain in the last month, the ``watch and wait'' system is applied, where in the first 48 hours only the use of analgetics is advised. Antibiotics should be given to children under two years of age with symptoms of acute otitis, as well as to children with purulent suppuration from the ear and perforated eardrum. Amoxicillin and Amoxicillin/clavulanate are used as the first line of therapy. As a second line of therapy, we use cephalosporins of the second and third generation. The occurrence of disease recurrence and resistance to antibiotics is a consequence of their widespread use, which promotes the colonization of bacteria in the mucous membrane of the nasopharynx and changes the protective physiological flora of the mucous membrane.

Key words: otitis media – microbiology, drug therapy, clinical practical guidelines, antibiotic treatment, children.

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GLJIVIČNA OBOLJENJA GORNJIH RESPIRATORNIH PUTEVA – SAVREMENI PRISTUP

FUNGAL DISEASES OF THE UPPER RESPIRATORY TRACT – AN UPDATE

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SAŽETAK

Prisustvo gljiva u sluznici nosa i paranazalnih sinusa otkriveno je i kod zdravih osoba i kod pacijenata sa hroničnim rinosinuzitisima. Najčešća vrsta koja kolonizuje sluzokožu i dovodi do gljivičnog rinosiuzitisa (GRS) je *Aspergillus* spp. GRS je zapaljenje sinonazalne šupljine i može da se javi u invazivnom ili neinvazivnom obliku. Histopatološki pregledi koji procenjuju gljivičnu vaskularnu invaziju i stepen destrukcije kosti su od pomoći za diferencijaciji. Invazivno zapaljenje je najčešće kod pacijenata sa imunodeficijencijom i razvija se brzo, u roku od 4 nedelje. Neinvazivni oblici češće zahvataju samo sluzokožu sinusa kod pacijenata sa normalnim imunološkim sistemom, kao i kod pacijenata sa hroničnim oboljenjima. Alergijski gljivični rinosinusitis (AGRS) dijagnostikuje se na osnovu karakterističnog CT nalaza, kliničkih simptoma, polipa, micelijuma bez invazije tkiva i dokaza o I tipu hipersenzitivnosti, pozitivnih kožnih proba i seroloških testova. Faktori potencijalno predisponirajući za razvoj GRS su život na selu, dijabetes i prethodne operacije. AGRS je češći od drugih oblika gljivičnog sinusitisa kod mlađih, zdravih pacijenata. Metoda izbora u slučaju hroničnog neinvazivnog gljivičnog sinusitisa je hirurško lečenje. Endoskopska hirurgija je zlatni standard koji uspostavlja pravilnu drenažu i ventilaciju u sinusima nakon uklanjanja gljivičnih masa. Ne postoji jedinstven stav o upotrebi antigljivičnih lekova. Terapija kortikosteroidima se preporučuje i pre planirane operacije i postoperativno. U slučaju AGRS-a predlaže se imunoterapija, koja menja tok bolesti i poboljšava kvalitet života pacijenata nakon hirurških zahvata.

Ključne reči: gljive, mukoza, sinusi, *Aspergillus*

ABSTRACT

The presence of fungi in the mucosa of the nose and paranasal sinuses has been reported in both healthy people and patients with chronic sinusitis. *Aspergillus* spp. is the most common species that colonizes the mucosa and causes fungal sinusitis. Fungal rhinosinusitis (FRS) is an infection of the sinuses that can be invasive or noninvasive. Differentiation is aided by histopathological examinations that assess fungal vascular invasion and the degree of bone destruction. In patients with immunodeficiency, invasive inflammation develops within 4 weeks. Noninvasive forms commonly include only the sinus mucosa in patients with normal immune systems and chronic diseases. The characteristic CT scan, clinical symptoms, polyps, mycelium without tissue invasion, and evidence of IgE-dependent allergy, positive skin prick and serological tests are used to diagnose allergic fungal rhinosinusitis (AFRS). Rural living, diabetes, and previous surgery are all risk factors for the development of FRS. In younger, healthier patients, AFRS is more common than other types of fungal sinusitis. Surgical treatment is the preferred option for chronic noninvasive fungal sinusitis. After removal of fungal masses, endoscopic surgery is the gold standard for restoring proper drainage and ventilation within the sinuses. There is no unified position on the use of antifungal medications. Steroid therapy is advised both before and after planned surgery. In the case of AFRS, immunotherapy is suggested, which improves disease progression and patient quality of life following surgical procedures.

Key words: fungi, mucosa, sinuses, *Aspergillus*

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OLFAKTORNA DISFUNKCIJA KOD PACIJENATA SA OBOLJENJEM GORNJIH DISAJNIH PUTEVA

OLFACTORY DYSFUNCTION IN PATIENTS WITH UPPER RESPIRATORY TRACT INFECTIONS

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SAŽETAK

Postinfektivne olfaktorne disfunkcije (PIOD), odnosno olfaktorne disfunkcije nastale nakon akutne infekcije gornjih disajnih puteva (GDP), su druge po učestalosti od svih olfaktornih disfunkcija. Tipična anamneza kod postinfektivne olfaktorne disfunkcije podrazumeva da svi simptomi akutne upale GDP nestaju nakon ozdravljenja osim smanjene olfaktorne funkcije, u okviru koje će oko 50% njih imati parosmiju.

Kod PIOD se najčešće radi o pacijentima ženskog pola, uzrasta 40-60 godina. Olfaktorna disfunkcija se manifestuje u vidu i kvantitativnih i kvalitativnih poremećaja. Parosmia i fantosmia su najčešće kod PIOD, a često su neprijatne (miris pečenja, smrdljiv, pokvarena hrana, fekalni).

Dijagnostika kod PIOD podrazumeva anamnezu, ORL pregled, endoskopiju nosa, psihofizičko testiranje čula mirisa – ortonazalnu olfaktometriju, a u nekim slučajevima i MR endokranijuma i olfaktivnog sistema i CSERP – „chemosensory event related potentials".

Prognoza olfaktorne disfunkcije kod pacijenata sa oboljenjem GDP – 32-66% će se oporaviti do 3 godine.

Kod pacijenata sa olfaktornom disfunkcijom, hospitalizovanih zbog oboljenja COVID-19, 79.6% je anosmičnih i 20.4% hiposmičnih. Fantosmija i parosmija su uočene kod 12.6% i 32.4% pacijenata. Oko 7% pacijenata ostaje anosmično i nakon godinu dana.

Terapijske opcije kod PIOD i COVID-19 olfaktorne disfunkcije su ograničene. Ako olfaktorna disfunkcija traje do 2 nedelje i spontano se oporavi, terapija nije potrebna. Ako traje duže od 2 nedelje, uključuje se olfaktorni trening, uz eventualno Omega 3 suplemente i kapi vitamina A topikalno. Oralni kortikosteroidi se ne preporučuju unutar 2 nedelje, a nakon toga se mogu uvesti ako postoje znaci inflamacije u olfaktornoj regiji, što važi i za intranazalne kortikosteroide.

Ključne reči: postinfektivna olfaktorna disfunkcija, COVID-19 olfaktorna disfunkcija

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ABSTRACT

Postinfectious olfactory dysfunction (PIOD), i.e. olfactory dysfunction in patients with acute upper respiratory tract infections (URTI), are second most frequent of all olfactory dysfunctions. Tipical anamnesis in postinfectious olfactory dysfunction is when all symptoms of acute URTI cease, all but reduced olfactory function. About 50% of these patients will have parosmia.

PIOD usually occurs in female patients, 40-60 years of age. Olfactory dysfunction presents in forms of both quantitative and qualitative dysorders. Parosmia and phantosmia are most frequent in PIOD, often are unpleasant (rotten food, fecal,...).

Diagnostics in patients with PIOD means anamnesis, ENT examination, nasal endoscopy, phychophysical olfactory testing – orthonasal olfactometry, and in some cases MRI of the endocranium and olfactory system, and CSERP („Chemosensory event related potentials").

The prognosis of postinfectious olfactory dysfunction is good – 32-66% will fully recover within 3 years.

In a large European study, patients with olfactory dysfunction hospitalized for COVID-19 were in 79.6% anosmic and in 20.4% hyposmic. Phantosmia and parosmia were present in 12.6% and 32.4% patients. About 7% of patients will remain anosmic after a year.

Therapeutic options in PIOD and COVID-19 olfactory dysfunction are limited. If olfactory dysfunction lasts up to 2 weeks and recovers spontaneously, there is no need for therapy. If it lasts longer, olfactory training should be included, and maybe with Omega 3 and topical vitamin A drops along. Oral corticotseroids are not recommended within first 2 weeks, but after that period can be introduced if there are signs of inflammation in olfactory region, as well as intranasal corticosteroids.

Key words: postinfectious olfactory dysfunction, COVID-19 olfactory dysfunction

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KOMPLIKACIJE AKUTNOG BAKTERIJSKOG RINOSINUZITISA

COMPLICATIONS OF ACUTE BACTERIAL RHINOSINUSITIS

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SAŽETAK

Uvod/Cilj: Prema smernicama za dijagnostiku i lečenje rinosinuzitisa iz 2020. godine, simptomi akutnog bakterijskog rinosinuzitisa (ABRS) traju manje od 12 nedelja. Endoskopski pregled nosne šupljine je obavezan deo kliničkog pregleda kod ABRS. Kompjuterizovana tomografija (CT) paranazalnih sinusa se u ABRS ne primenjuje, osim u slučajevima teškog toka bolesti i/ili prisutnih znakova komplikacija ABRS. Cilj ovog preglednog rada je da se ukaže na osnovne principe dijagnostike i lečenja komplikacija ABRS.
Metode: Pregled literature.
Rezultati: Komplikacije ABRS se mogu podeliti na orbitalne, endokranijalne i koštane. U orbitalne komplikacije se ubrajaju preseptalni inflamatorni edem (periorbitalni celulitis), postseptalni celulitis, subperiostalni apsces i orbitalni apsces. Endokranijalne komplikacije se javljaju po tipu flegmone (meningitis, cerebritis) ili apscesa (epiduralni, subduralni, intracerebralni). Tromboflebitis kavernoznog sinusa se takođe smatra endokranijalnom komplikacijom. Koštane komplikacije se pre svega odnose na osteomijelitis frontalne kosti. Putevi širenja bakterijske infekcije ka orbiti, odnosno endokranijumu obuhvataju prirodne i preformirane puteve, kao što su vene i venski kanali, dehiscencije lamine papiracee, erozije kosti zida odgovarajućeg sinusa. Dijagnostika komplikacija ABRS treba da bude sprovedena neposredno nakon prijema bolesnika na bolničko lečenje i obuhvata laboratorijske analize, endoskopiju nosa i CT paranazalnih sinusa. Osim detaljne anamneze (heteroanamneze), neophodna je dobra interdisciplinarna saradnja, pre svega između otorinolaringologa, oftalmologa, neurologa, neurohirurga, radiologa, a, ukoliko je potrebno, pedijatra i maksilofacijalnog hirurga. Osnovni princip lečenja komplikacija ABRS je endoskopska hirurška drenaža zahvaćenog paranazalnog sinusa, kao i parenteralna primena antibiotika, najbolje u skladu sa rezultatima antibiograma.
Zaključak: Komplikacije ABRS su po život opasna stanja, koja zahtevaju brzu i efikasnu dijagnostiku i lečenje.
Ključne reči: Apsces; Celulitis; Osteomijelitis; Sinuzitis

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ABSTRACT

Introduction/Aim: According to the 2020 guidelines for the diagnosis and treatment of rhinosinusitis, symptoms of acute bacterial rhinosinusitis (ABRS) last less than 12 weeks. Endoscopic examination of the nasal cavity is a mandatory part of the clinical examination in ABRS. Computed tomography (CT) of the paranasal sinuses is not used in ABRS, except in cases of severe course of the disease and/or signs of ABRS complications are present. The aim of this review is to indicate the basic principles of diagnosis and treatment of ABRS complications.
Methods: Review of the literature.
Results: ABRS complications can be divided into orbital, endocranial, and osseous. Orbital complications include preseptal inflammatory edema (periorbital cellulitis), postseptal cellulitis, subperiosteal abscess, and orbital abscess. Endocranial complications occur according to the type of phlegmon (meningitis, cerebritis) or abscess (epidural, subdural, intracerebral). Cavernous sinus thrombophlebitis is also considered as endocranial complication. Osseous complications primarily refer to osteomyelitis of the frontal bone. The ways of bacterial infection spreading towards the orbit, i.e. the endocranium, include natural and preformed ways, such as veins and venous channels, dehiscences of the lamina papyracea, bone erosion of the wall of the corresponding sinus. Diagnostics of complications should be carried out immediately after admission of the patient for hospital treatment and includes laboratory analyses, endoscopy of the nose and CT scan of the paranasal sinuses. Apart from a detailed anamnesis (heteroanamnesis), good interdisciplinary cooperation is necessary, primarily between an otorhinolaryngologist, a radiologist, a neurosurgeon, an ophtalmologist, and, if necessary, a pediatrician and a maxillofacial surgeon. The basic principles of treating complications of ABRS is endoscopic surgical drainage of affected paranasal sinus, as well as parenteral administration of antibiotics, best in accordance with the results of the antibiogram.
Conclusion: Complications of ABRS are life-threatening conditions that require prompt and effective diagnosis and treatment.
Key words: Abscess; Celullitis; Osteomyelitis; Sinusitis

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SAVREMEN PRISTUP PNEUMONIJAMA

MODERN APPROACH TO PNEUMONIA

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SAŽETAK

Pneumonija predstavlja jednu od najčešćih infekcija u opštoj populaciji (eng. community-acquired pneumonia- CAP), i drugu najčešću intrahospitalnu infekciju (eng. hospital-acquired pneumonia- HAP). Najčešći prouzrokovači su virusi, bakterije i gljivice. Klinički tok zavisi od prouzrokovača i opšteg stanja domaćina; povišen rizik imaju deca, osobe starije od 65 godina, osobe sa urođenom ili stečenom imunodeficijencijom, osobe sa prethodnom neregulisanom hroničnom bolesti i onkološki bolesnici. Klinička prezentacija značajno varira, ali se najčešće manifestuje u vidu kašlja, bolova u grudima, povišene telesne temperature i otežanog disanja. U dijagnostici, pored anamnestičkih podataka i fizikalnog pregleda, neophodno je učiniti radiografiju grudnog koša, na kojoj se uočava de novo zona konsolidacija, kao i laboratorijske analize, u kojima su prisutni znaci infekcije- povišene vrednosti pozitivnih reaktanata akutne faze. Najčešće komplikacije pneumonije su razvoj akutne respiratorne insuficijencije i sepse. Poseban entitet predstavljaju intrahospitalne pneumonije, koje su pneumonije nastale 48h nakon prijema, i pneumonije usled upotrebe mehaničke ventilacije (eng. ventilator-associated pneumonia- VAP). Ova dva entiteta značajno produžavaju trajanje hospitalizacije, kao i mortalitet. Lečenje pneumonija se sprovodi po smernicama Evropskog respiratornog udruženja (ERS) i Američkog torakalnog društva (eng. American Thoracic Society- ATC) i bazira se na izolaciji patogena i tretiranju istog po antibiogramu/mikogramu ili primenom antivirotika, kao i primenom druge suportivne terapije. Potrebno je pravovremena i precizna dijagnoza pneumonije, kako bi se što pre započela adekvatna terapija i time sprečilo potencijalno letalni ishod.

Ključne reči: pneumonija, radiografija, CAP, HAP

ABSTRACT

Pneumonia is one of the most common infections in the general population (community-acquired pneumonia - CAP), and the second most common intrahospital infection (hospital-acquired pneumonia - HAP). The most common causes are viruses, bacteria and fungi. The clinical course depends on the infectious agent and the general condition of the host; children, people over 65 years old, people with congenital or acquired immunodeficiency, people with a previous unregulated chronic disease and cancer patients have an increased risk for developing pneumonia. The clinical presentation varies significantly, but it is most often manifested in the form of cough, chest pain, elevated body temperature and difficulty breathing. In diagnostics, in addition to anamnestic data and a physical examination, it is necessary to make a chest radiography, on which a new zone of consolidation can be observed, as well as laboratory analyses, in which signs of infection are present - elevated values of positive reactants of the acute phase. The most common complications of pneumonia are the acute respiratory failure and sepsis. A special entity is intrahospital pneumonia, which is pneumonia that occurred 48 hours after hospital admission, and pneumonia due to the use of mechanical ventilation (ventilator-associated pneumonia - VAP). These two entities significantly prolong the duration of hospitalization, as well as the mortality. The treatment of pneumonia is carried out according to the guidelines of the European Respiratory Society (ERS) and the American Thoracic Society (ATC) and is based on the isolation of the pathogen and its treatment by antibiogram/micogram or the use of antiviral drugs, as well as the use of other supportive therapy. A timely and precise diagnosis of pneumonia is necessary, in order to start adequate therapy and thereby prevent a potentially fatal outcome.

Key words: pneumonia, radiography, CAP, HAP

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BACTERIAL AND VIRAL PNEUMONIA - RADIOLOGICAL CHALLENGES

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SAŽETAK

Uprkos napretku u dijagnostici i lečenju, pneumonija predstavlja glavni uzrok morbiditeta i mortaliteta kod odraslih pacijenata. Od velikog je značaja postojanje usaglašenih kriterijuma za prepoznavanje radioloških karakteristika pneumonije uzrokovane specifičnim organizmima. Primarni radiološki modalitet pregleda je radiografija pluća. U većini slučajeva je dovoljna za postavljanje dijagnoze i može eliminisati potrebu za dodatnim radiološkim procedurama. Kada su rezultati radiografije pluća nekonkluzivni ili ukazuju na postojanje komplikacija, kompjuterizovana tomografija je obavezna. Pravovremeno prepoznavanje specifičnih radioloških obrazaca pneumonije u korelaciji sa kliničko-laboratorijskim parametrima, uzrastom i imunološkim statusom najbolji je pristup u dijagnostici plućnih infekcija. Iako su dostupne imidžing karakteristike obično nespecifične, postoje određene osobenosti koje bliže ukazuju na virusnu ili bakterijsku etiologiju inflamacije. Radiografski nalaz kod virusnih pneumonija može biti normalan, ali se najčešće manifestuje kao bilateralno, simetrično parahilarno i bronhijalno zasenčenje sa ili bez atelektaze. Intersticijalna zasenčenja često predstavljaju početni rendgenski nalaz koji brzo može napredovati do bilateralnih konsolidacija. Mogu se videti znaci hilarne limfadenopatije, dok je pleuralni izliv retkost. Bakterijsku pneumoniju karakteriše konsolidacija i ispunjavanje alveola eksudatom, inflamatornim ćelijama i fibrinom. Tipičan rendgenski nalaz lobarne bakterijske pneumonije je homogena konsolidacija sa vazdušnim bronhogramom, često praćena pleuralnim izlivom. Difuzna bilateralna nehomogena zasenčenja se ređe viđaju. Bronhopneumonija kao oblik bakterijske pneumonije počinje peribronhiolarnom inflamacijom koja zahvata više segmenata i širi se na susedni parenhim, dajući radiološku sliku mrljasto-trakastih nehomogenih zasenčenja. Konfluiranjem više ovakvih zona može da oponaša obrazac lobarne pneumonije. Radiolozi moraju pravovremeno da dokumentuju lokalizaciju i ekstenziju pneumonije, procene evoluciju, tok oboljenja i detektuju prisustvo komplikacija.

Ključne reči: pneumonija, radiografija, dijagnostika

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ABSTRACT

Despite significant progress in diagnosis and treatment, pneumonia is a major cause of morbidity and mortality in adult patients. The content of the paper should provide an overview of the common and unique radiological features of bacterial and viral pneumonia. Chest radiography is often sufficient to establish a diagnosis and may eliminate the need for additional radiographic procedures. When the results of radiography are inconclusive, computed tomography is mandatory. Timely identification of specific radiological patterns of pneumonia in correlation with clinical-laboratory parameters, age and immune status is the best approach in the diagnosis of lung infections. Although available imaging features are usually nonspecific, there are certain features that more closely indicate a viral or bacterial etiology of inflammation. Radiographic findings in viral pneumonia can be normal, but frequently manifest as bilateral, symmetrical parahilar and bronchial opacities with or without atelectasis. Signs of hilar lymphadenopathy may be seen, while pleural effusion is rare. Bacterial pneumonia is characterized by consolidation and filling of alveoli with exudate, inflammatory cells and fibrin. A typical radiological finding is homogeneous consolidation with air bronchogram, often accompanied by pleural effusion. Bronchopneumonia begins with peribronchiolar inflammation that affects several segments and spreads to the adjacent parenchyma, giving a radiological image of patchy and band-like inhomogeneous opacities. Confluence of these areas in adjacent lobar segments may mimic a lobar pneumonia pattern. Radiologists must document the localization and extent of pneumonia, assess the evolution and course of the disease, and detect potential complications.

Key words: pneumonia, radiography, diagnostics

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HPV INFEKCIJA I SKVAMOZNI KARCINOM GRLIĆA MATERICE – GDE SMO DANAS?

HPV INFECTION AND SQUAMOUS CELL CARCINOMA OF THE CERVIX - WHERE ARE WE TODAY?

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SAŽETAK

Infekcija Humanim papiloma virusom (HPV) je najčešća seksualno prenosiva infekcija u svetu. Oko 80% ljudi nekada je u svom životu imalo HPV infekciju. Verovatnoća transmisije posle samo jednog odnosa je 60%, za razliku od virusa humane imunodeficijencije (HIV) gde je samo 1-2%.

Do danas je identifikovano preko 40 tipova HPV koji imaju sklonost inficiranju genitalne regije muškaraca i žena. Infekcija HPV tipovima niskog rizika dovodi do nastanka genitalnih bradavica, a tipovima visokog rizika do premalignih i malignih promena grlića materice i drugih delova anogenitalne regije.

Prevalencija HPV infekcije je najveća u starosti do 25 godina, gde dostiže i 50%. Posle 35 godine života ona se smanjuje na ispod 5% zahvaljujući prirodnom toku HPV infekcije koji je u zdravom organizmu je spontana eliminacija. Od svih HPV pozitivnih osoba, u periodu od 18-24 meseca, infekcija se spontano eliminiše u 85-90% slučajeva. Perzistentna HPV infekcija je neophodan, ali ne i dovoljan faktor za nastanak prekancera i kancera grlića materice. Za nastanak bolesti neophodni su i drugi faktori od kojih su najvažniji pušenje i oslabljen imuni sistem. Proces kancerogeneze traje 10-15 godina, što daje dosta vremena da se redovnim pregledima otkriju promene.

Koncept prevencije raka grlića materice koji najviše obećava u budućnosti je kombinacija HPV vakcinacije i skrininga. Primarna prevencija vakcinacijom, za sada, ne pruža zaštitu od svih onkogenih HPV tipova. Stoga je neophodno pridržavati se nacionalnih preporuka za skrining raka grlića materice, bez obzira na vakcinalni status. Skrining program treba da bude organizovanog tipa, sa obezbeđenom kontrolom kvaliteta na svim nivoima.

Ključne reči: HPV infekcija, karcinom grlića materice, prevencija

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ABSTRACT

Human papillomavirus (HPV) infection is the most common sexually transmitted infection in the world. About 80% of people have had an HPV infection at some point in their lives. The probability of transmission after just one intercourse is 60%, unlike the Human immunodeficiency virus (HIV) where it is only 1-2%.

To date, more than 40 types of HPV have been identified that have a tendency to infect the genital region of men and women. Infection with low-risk HPV types leads to genital warts, while high-risk types lead to premalignant and malignant changes in the cervix and other parts of the anogenital region.

The prevalence of HPV infection is highest before the age of 25, when it reaches 50%. After 35 years of life, it decreases to below 5%, thanks to the natural course of HPV infection, which, in a healthy organism, is spontaneous elimination. Out of all HPV-positive persons, the infection is spontaneously eliminated in 85-90% of cases during a period of 18-24 months,. Persistent HPV infection is a necessary, but not sufficient for the development of precancer and cervical cancer. Other factors are necessary for the development of the disease, the most important being7 smoking and a weakened immune system. The process of carcinogenesis lasts 10-15 years, which gives plenty of time for regular examinations to detect changes.

The most promising cervical cancer prevention concept in the future is the combination of HPV vaccination and screening. Primary prevention by vaccination, for now, does not provide protection against all oncogenic HPV types. Therefore, it is necessary to adhere to national recommendations for cervical cancer screening, regardless of vaccination status. The screening program should be of an organized type, with quality control ensured at all levels

Key words: HPV infection, cervical cancer, prevention

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ADENOKARCINOM GRLIĆA MATERICE – ULOGA HPV TIPIZACIJE U RANOM OTKRIVANJU I DIJAGNOSTICI

ADENOCARCINOMA OF THE CERVIX – THE ROLE OF HPV TYPING IN EARLY DETECTION AND DIAGNOSIS

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SAŽETAK

Uvod: U novije vreme se jasno uočava da su incidenca i mortalitet karcinoma grlića materice ponovo u porastu. Kao i planocelularni karcinomi grlića, i adenokarcinomi su takođe povezani sa infekcijom humanim papilloma virusima i to posebno sa visoko onkogenim tipovima HPV 18, 16 i 45. Cilj rada je da se pokaže važnost HPV tipizacije ne samo u grupi pacijentkinja sa kolposkopskim i/ili citološkim promenama na grliću materice već i u celoj seksualno aktivnoj populaciji žena.

Metod: Istraživanje je sprovedeno u GAK „Narodni Front" u Beogradu i obuhvatilo je period od 4 godine (2019.-2022.). Analizirani su podaci o pacijentkinjama testiranim na prisustvo HPV u cerviksu i podaci o pacijentkinjama kod kojih je dijagnostikovan invazivni stadijum adenokarcinoma cerviksa.

Rezultati: U posmatranom periodu na našoj klinici dijagnostikovano je 48 slučajeva adenokarcinoma grlića materice i to 2019. godine 7, 2020. godine 12, 2021. godine 13 i 2022. godine 16. U istom periodu na prisustvo HPV virusa u cerviksu testirano je 1090 pacijentkinja od kojih je pozitivno bilo 390 odnosno 35,7%. Od svih pozitivno testiranih na prisustvo HPV tip 16 imalo je čak 20,5% pacijentkinja, tip 18 1,02%, tip 45 2,3% odnosno od svih pozitivno testiranih pacijentkinja 23,84% je bilo pozitivno na HPV 16, 18 i 45.

Zaključak: Ovo istraživanje ima za cilj da istakne značaj HPV tipizacije kako bi se redovnim citološkim i kolposkopskim pregledima kod pacijentkinja sa visokoonkogenim tipovima virusa maligna bolest otkrila u preinvazivnom stadijumu odnosno kako bi se prevenirao razvoj invazivnog adenokarcinoma grlića materice.

Ključne reči: HPV, adenokarcinom grlića, incidenca

ABSTRACT

Introduction: Recently, it has been clearly observed that the incidence and mortality from cervical cancer are increasing again. Like squamous cell carcinomas of the cervix, adenocarcinomas are also associated with infection with human papilloma viruses, especially with the highly oncogenic types HPV 18, 16 and 45. Purpose of this work should show the importance of HPV typing not only in the group of patients with colposcopic and/or or cytological changes on the cervix, but also in the entire sexually active population of women.

Method: The research was carried out at Ob&Gyn Clinic "Narodni Front" in Belgrade and covered a period of 4 years (2019-2022). Data on patients tested for the presence of HPV in the cervix and data on patients diagnosed with an invasive stage of adenocarcinoma of the cervix were analyzed.

Results: In the observed period, 48 cases of adenocarcinoma of the cervix were diagnosed in our clinic, 7 in 2019, 12 in 2020, 13 in 2021, and 16 in 2022. In the same period, 1090 patients were tested for the presence of the HPV virus in the cervix. 390 or 35.7% were positive. As many as 20.5% of all patients tested positive for the presence of HPV type 16, type 18 1.02%, type 45 2.3%, that is, of all patients tested positive, 23.84% were positive for HPV 16, 18 and 45.

Conclusion: This research aims to confirm the importance of HPV typing in order to detect the malignant disease in the pre-invasive stage with regular cytological and colposcopic examinations in patients with highly oncogenic virus types, i.e. to prevent the development of invasive adenocarcinoma of the cervix.

Key words: HPV, cervical adenocarcinoma, incidence

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BACTERIAL VAGINOSIS - A CHALLENGE IN DIAGNOSTICS AND TREATMENT

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SAŽETAK

Bakterijska vaginoza je veoma rasprostranjen poremećaj kod žena u reproduktivnom periodu širom sveta i predstavlja disbiozu vaginalne flore. Prevalecija varira u različitim delovima sveta, najviša je u južnoj i subsaharskoj Africi (60%), a najniža u Australiji i Zapadnoj Evropi (4,7-8,6%). Kod bakterijske vaginoze dolazi do gubitka ili smanjenja Lactobacillus-a sa paralelnim povećanjem fakultativnih ili obligatornih anaerobnih mikroba. Najčešći faktori rizika su vaginalno ispiranje, rano stupanje u seksualne odnose, veći broj različitih seksualnih partnera kao i partnera koji je imao prethodno veći broj drugih partnera, seksualni odnosi tokom menstruacije, postojanje STD, prisustvo intrauterinog uloška, upotreba antibiotika, starost, rasa i imuni sistem. Klinička slika je u 50-70% asimptomatska, dok se ukoliko postoji simptomatologija ispoljava neiritirajući vaginalnim iscetkom neprijatnog mirisa, najčešće nakon menstruacije ili seksualnih odnosa. Prisustvo bakterijske vaginoze može dovesti do različitih ginekoloških i obsteričkih komplikacija, kao što su povećana učestalost endometritisa, pelvične inflamatorne bolesti, prevremene rupture plodovih ovojaka, spontanog pobačaja, prevremenog porođaja, postporođajnog endometritisa, infekcijom rane od epiziotomije i nakon carskog reza. Brza i tačna dijagnoza nije laka zbog velikog preklapanja simptoma i najčešće se postavlja kada su prisutna bar 3 od 4 Amselova kriterijuma: prisustvo tankog, mlečastog vaginalnog iscetka; prisustvo Klu (Clue) ćelija u vaginalnom iscetku; prisustvo karakterističnog mirisa na ribu usled prisustva isparljivih amina proizvedenih anaerobnim metabolizmom i kada je pH vagine >4,5, ili Nugent skorom ili savremenim molekularnim DNK testovima. Preporučena antibiotska terapija uključuje metronidazol ili klindamicin. Potrebne su dalje prospektivne studije da bi se procenio efekat skrininga kod asimptomatskih trudnica kao i kod žene koje nisu trudne.

Ključne reči: Infekcija, bakterijska vaginoza, dijagnostika

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ABSTRACT

Summary: Bacterial vaginosis is a common disorder in women during the reproductive period worldwide and represents a dysbiosis of the vaginal flora. Prevalence varies in different parts of the world, being the highest in southern and Sub-Saharian Africa (60%), and the lowest in Australia and Western Europe (4.7-8.6%). Bacterial vaginosis is characterized by loss or reduction of Lactobacillus species with an increase in facultative or obligate anaerobic microbes. The most common risk factors are vaginal douching, early sexual intercourse, increased number of different sexual partners and a partner who previously had increased number of other partners, sexual intercourse during menstruation, presence of STD, presence of an intrauterine device, use of antibiotics, age, race and immune system. It is asymptomatic in 50-70% of patients, while symptomatology manifests as a non-irritating thin homogenous vaginal discharge with amine fishy odor. The presence of bacterial vaginosis can lead to various gynecological and obstetric complications, such as endometritis, pelvic inflammatory disease, premature rupture of the fetal membranes, spontaneous abortion, premature birth, postpartum endometritis, episiotomy wound infection and infection after caesarean section. A quick and accurate diagnosis is not easy due to the large overlap of symptoms and is most often established when at least 3 of the 4 Amsel criteria are present or by Nugent's score or modern molecular DNA tests. Recommended antibiotic therapy includes metronidazole or clindamycin. Further prospective studies are needed to evaluate the effect of screening in asymptomatic pregnant women as well as in non-pregnant women.

Key words: Infection, bacterial vaginosis, diagnostics

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DEFINICIJE SEPSE

SEPSIS DEFINITIONS

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SAŽETAK

Sepsa predstavlja veliki zdravstveni problem, imajući u vidu da svake godine preko 20 miliona ljudi u svetu oboli od sepse. I pored velikog razvoja medicine poslednjih decenija, stopa mortaliteta sepse je izuzetno visoka (oko 26%). Razvoj definicije sepse tekao je uporedo sa razumevanjem mehanizma nastanka sepse. Još početkom 90-tih nastala je prva definicija sepse, prema kojoj je sepsa definisana kao sindrom sistemskog inflamatornog odgovora (SIRS) uz prisustvo sumnje ili dokaza o postojanju infekcije. Zbog velikog broja neadekvatno dijagnostikovanih pacijenata sa sepsom nastala je druga definicija, po kojoj je sepsa definisana kao klinički sindrom. Zbog nedovoljne specifičnosti prethodnih definicija sepse, ali i novih saznanja o patofiziološkom mehanizmu sepse, 2016. godine nastala je i treća definicija sepse. Prema ovoj definiciji, sepsa je životno ugrožavajuće stanje u čijoj osnovi se nalazi organska disfunkcija nastala kao posledica neodgovarajućeg odgovora organizma na infekciju. Septični šok se manifestuje cirkulatornom, ćelijskom i metaboličkom nestabilnošću i karakteriše se nivoom laktata u serumu većim od 2 mmol/L i prisutnom hipotenzijom koja nakon primene intravenskih rastvora, zahteva terapiju vazopresorima. Ova definicija sepse i septičnog šoka omogućuje rano prepoznavanje i lečenje bolesnika sa sepsom, koji predstavljaju ključne korake u smanjenju incidence i mortaliteta od ove bolesti.

Ključne reči: sepsa, definicija, SOFA, mortalitet

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ABSTRACT

Sepsis is a significant health problem, considering over 20 million people fall ill yearly. Despite the significant development of medicine in recent decades, the mortality rate of sepsis is exceptionally high (about 26%). The development of the definition of sepsis went along with understanding the mechanism of sepsis. At the beginning of the 90s, the first definition of sepsis was created, according to which sepsis was defined as systemic inflammatory response syndrome (SIRS) with the presence of suspicion or evidence of infection. Due to many inadequately diagnosed patients with sepsis, another definition was created, according to which sepsis is defined as a clinical syndrome. A third definition of sepsis was developed in 2016 as a result of the previous definitions' lack of clarity and new information on the pathophysiological process of sepsis. According to this definition, sepsis is a life-threatening condition based on organic dysfunction resulting from the body's inappropriate response to infection. Septic shock is manifested by circulatory, cellular and metabolic instability. It is characterized by a serum lactate level greater than two mmol/L and hypotension, which requires vasopressor therapy after administering intravenous solutions. This definition of sepsis and septic shock enables early recognition and treatment of patients with sepsis, which represent critical steps in reducing the incidence and mortality from this disease.

Key words: sepsis, definition, SOFA, mortality

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PRINCIPI INICIJALNOG LEČENJA SEPTIČNOG BOLESNIKA

PRINCIPLES OF THE INITIAL MANAGEMENT IN SEPTIC PATIENT

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SAŽETAK

Uvod: Sepsa i septični šok predstavljaju značajne zdravstvene probleme koji uprkos unapređenim strategijama lečenja nose veliku smrtnost. Na ishod mogu da utiču povoljno rano postavljena dijagnoza i pravovremena terapija. Revidirane preporuke *Surviving Sepsis Campaign Guidelines* (publikovane 2021. godine) zasnivaju se na najnovijim dokazima iz literature i predstavljaju standard lečenja odraslog septičnog bolesnika. Iako su usmerene na bolničke uslove lečenja, principi inicijalnog zbrinjavanja mogu da se primene u različitim okruženjima.

Inicijalno lečenje: Za unapređenje lečenja septičnih bolesnika preporučuje se razvijanje strukturiranih programa koji uključuju skrining i primenu standardnih operativnih procedura (na primer *Early Goal-Directed Therapy*). Koriste se različiti instrumenti za skrining: kriterijumi sistemskog inflamatornog odgovora (SIRS), brzi SOFA skor (quick Sequential Organ Failure Score - qSOFA) ili SOFA skor (Sequential Organ Failure Assessment), NEWS (National Early Warning Score), ili MEWS skor (Modified Early Warning Score). Nijedan od njih se ne preporučuje kao izolovani test za postavljanje dijagnoze. Sepsa je životno ugrožavajuće stanje gde je neophodno započeti terapiju i mere reanimacije odmah po uspostavljanju dijagnoze. Okosnice lečenja su: nadoknada tečnosti kristaloidnim rastvorima (30 ml/kg unutar 3 sata), primena vazopresornih lekova do uspostavljanja srednjeg arterijskog pritiska od 65mmHg i primena antibiotika kod potvrđene sepse ili septičkog šoka u prvom satu od dijagnoze.

Brzi prijem u jedinice intenzivnog lečenja (unutar 6 sati) je preporučeno, kao i hitne intervencije za uklanjanje izvora infekcije.

Zaključak: Još uvek postoje brojne kontroverze u postavljanju pravovremene dijagnoze i lečenju sepse. Rano primenjena terapija i sistematski pristup mogu da utiču pozitivno na preživljavanje bolesnika.

Ključne reči: Sepsa, Septični šok, Rana ciljana terapija, Antimikrobni lekovi, Vazokonstriktorni lekovi

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ABSTRACT

Background: Sepsis and septic shock remain major healthcare problems that despite improved treatment strategies still carry a high mortality. Early diagnosis and therapy are encouraged to improve outcomes.

The Surviving Sepsis Campaign Guidelines, with several updates (the last one from 2021) represent evidence-based recommendations and standard of care for adult septic patients. Although the focus is placed on the patients in the hospital environment, principles of initial management may be applied in different medical settings.

Initial management: For early identification and management of septic patient development of performance improvement programs that include screening and standard operating procedures (such as Early Goal-Directed Therapy) are recommended. Different screening tools are in use: systemic inflammatory response syndrome (SIRS) criteria, quick Sequential Organ Failure Score (qSOFA) or Sequential Organ Failure Assessment (SOFA), National Early Warning Score (NEWS), or Modified Early Warning Score (MEWS). Still, none of them should be used as the single criteria for the diagnosis.

Sepsis is a life-threatening condition where treatment and resuscitation should start immediately. Pillars of management are guided fluid management with crystalloids (at least 30 ml/kg within 3 hours), use of vasopressors to the target MAP of 65 mm Hg, and antibiotic administration for confirmed sepsis or septic shock within one hour.

Early ICU admission (within 6 hours) if required is recommended, as well as emergency source control interventions.

Conclusion: There are still a lot of controversies in both diagnosis and treatment strategies in septic patients. However, early treatment and a systematic approach may positively affect outcomes.

Key words: *Sepsis, Septic shock, Early Goal-Directed Therapy, Anti-Bacterial Agents, Vasoconstrictor Agents*

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NOVI POGLED NA BOLNIČKE PNEUMONIJE U POPULACIJI ABDOMINALNIH HIRURŠKIH PACIJENATA. IZAZOVI ZA PREVENTIVNO DELOVANJE

NEW HORIZONS IN HOSPITAL-ACQUIRED PNEUMONIA IN ABDOMINAL SURGICAL PATIENTS. CHALLENGES FOR THE PREVENTION

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SAŽETAK

Uvod: U populaciji abdominalnih hirurških pacijenata, bolnička pneumonija (BP) značajno povećavaju morbiditet i mortalitet.

Pacijenti i metode: Redovnim epidemiološkim nadzorom nad pacijentima koji su podvrgnuti abdominalnim operacijama, identifikovali smo postoperativne BP od 2007. do 2019. Upitnikom, su prikupljeni podaci o karakteristikama pacijenata, faktorima vezanim za procedure tokom lečenja I nege, kao i karakteristikama operativnog zahvata. U početnoj ugnežđenoj anamnestičkoj studiji, svaki hirurški pacijent sa BP je upoređen sa tri kontrolna pacijenta bez BP. Pacijenti u kontrolnoj grupi su upareni sa slučajevima prema starosti, polu, skoru Američkog društva anesteziologa i vrsti hirurške operacije. Takođe, pacijenti sa BP, koji su umrli, upoređeni su sa onima koji su preživeli.

Rezultati: Sto četrdeset hirurških pacijenata sa BP je bilo uključeno u početnu anamnestičku studiju. Multivarijantna logistička regresiona analiza (MLRA) je otkrila da su druge postoperativne infekcije, dužina boravka u jedinici intenzivnog lečenja, upotreba H2 blokatora, upotreba PPI/H2RA, višestruka transfuzija i upotreba vankomicina u hirurškoj profilaksi bili nezavisni faktori rizika za pojavu BP. Takođe, MLRA je identifikovala da su starost, dužina lečenja u bolnici, upotreba mehaničke ventilacije i ceftriaksona u terapiji BP-a bili nezavisno povezani sa lošim ishodom BP-a. Svi izolati *Acinetobacter baumannii* bili su otporni na aminoglikozide i pokazali su rezistenciju na karbapenem. Najčešće korišćeni antibiotici u obe grupe bili su vankomicin i metronidazol.

Zaključak: Naša studija je dala uvid u problem BP-om kod abdominalnih hirurških pacijenata i istakla nekoliko prioritetnih oblasti i ciljeva za njihovu prevenciju.

Ključne reči: antibiotici, upotreba antibiotika, abdominalna hirurgija, faktori rizika, bolnički letalitet, *Acinetobacter* spp.

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ABSTRACT

Background: In the population of abdominal surgical patients hospital-acquired pneumonia (HAP) significantly increases morbidity and mortality.

Patients and methods: Through regular hospital surveillance of patients who received abdominal operations, we identified postoperative HAP from 2007 to 2019. For the cohort of abdominal surgical patients, we collected data on patients characteristics, factors related to health-care and characteristics of operative procedure. In an initial nested case-control study, every surgical patient with HAP was compared with three control patients without HAP. Control patients were matched to the cases by age, gender, the American Society of Anesthesiologists score, and type of surgical operation. Also, the patients with HAP, who died were compared with those who survived.

Results: One hundred and forty surgical patients with HAP were enrolled in the initial nested case-control study. Multivariate logistic regression analysis (MLRA) revealed that other postoperative infections, length of intensive care unit stay, use of H2RA, use of PPI/ H2RA, multiple transfusion, and use of vancomycin in surgical prophylaxis were independent RFs for the occurrence of HAP. Also, MLRA identified that age, length of hospital stay, use of mechanical ventilation and ceftriaxone in HAP therapy were independently associated with poor outcome of HAP. All *Acinetobacter baumannii* isolates were resistant to aminoglycoside antimicrobial agents and showed carbapenem resistance. The most frequently used antibiotics in patients with HAP and without HAP were vancomycin and metronidazole, respectively.

Conclusion: Our study provided an insight into the burden of HAP in abdominal surgical patients, and highlighted several priority areas and targets for quality improvement.

Key words: antibiotics, drug consumptions, abdominal surgery, risk factors, in-hospital mortality, *Acinetobacter* spp.

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VISOKA PREVALENCA MULITI-REZISTENTNIH KLEBSIELLA PNEUMONIAE I ACINETOBACTER BAUMANNII IZOLOVANIH IZ KRVI ZA VREME COVID-19 PANDEMIJE U TERCIJARNOM KLINIČKO-BOLNIČKOM CENTRU U BEOGRADU

HIGH PREVALENCE OF MULTI-DRUG RESISTANT KLEBSIELLA PNEUMONIAE AND ACINETOBACTER BAUMANNII ISOLATED FROM BLOOD SAMPLES DURING COVID-19 PANDEMIC IN A TERTIARY CARE HOSPITAL IN BELGRADE (SERBIA)

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SAŽETAK

Uvod: Tokom pandemije bolesti izazvane korona virusom (COVID-19) postoje potencijalne opasnosti koje bi mogle da utiču na efikasnost antimikrobne terapije infekcija i ubrzaju pojavu antimikrobne rezistencije ovih lekova. Tako, nije retko da većina obolelih sa blagom kliničkom slikom i bez znakova pneumonije, ipak uzimaju antibiotike. Ovde smo analizirali kako je prisustvo pandemije COVID-19 uticalo na učestalost multirezistentne *Klebsiella pneumoniae* i *Acinteobacter baumanni* izolovanih iz uzoraka krvi u tercijarnoj zdravstvenoj ustanovi u Beogradu, u periodu od 15. marta do 31. decembra 2020.

Materijal i metode: Identifikacija i ispitivanje osetljivosti patogena obavljeno je korišćenjem Vitek 2 uredjaja. Procenat rezistencije za svaki antibiotik izračunat je kao procenat svih rezultata "Rezistentan" + "Intermedijarno osetljiv". Korišćeni su samo izolati iz hemokultura. Korišćen je samo prvi izolat kod jednog bolesnika. Za analizu procenta osetljivosti koristili smo program WHONET 5.6. u koji se unose svi naši izolati duže od deceniju.

Rezultati: Broj kreveta u zdravstvenoj ustanovi je bio 538. U studiju smo uključili 3897 kovid pacijenata sa srednjim trajanjem boravka u bolnici od 10,2 dana i 39,6 BD (krevet/dan). Na odeljenju intenzivne nege i na invazivnoj mehaničkoj ventilaciji bilo je 34,4% (1341/3897) pacijenata, odnosno 13,2% (516/3897). Ukupan broj izolata je 2329. Pozitivna hemokultura je nađena u 660 od 3300 testiranih uzoraka (20%). Ukupan broj izolata *K.pneumoniae* i *A. baumannii* bio je 184 (7,9%) i 237 (11,9%), redom. Pozitivne hemokulture na *K. pneumoniae* i *A. baumannii* bile su 35/660 (5,3%) i 93/660 (14,1%), redom. *K. pneumoniae* iz uzoraka krvi bila je otporna na amikacin (32,4%), gentamicin (88,2%), ko-amoksiklav (81,8%), ampicilin/sulbaktam (94,7%), piperacilin/tazobaktam (97,1%), ceftazidim (97,1%) , cefepim (97,1%), levofloksacin (97,1%), trimetoprim/sulfametoksazol (54,7%), ertapenem (94,1%), meropenem (81,9%), imipenem (44,1%), tigeciklin (46,7%) i kolistin (49%). *A. baumannii* iz uzoraka krvi bio je otporan na sve testirane antimikrobne lekove (100%), osim na amikacin (76,9%) i kolistin (0%).

Zaključci: Kovid-19 oboljenje može imati ozbiljan dugoročni uticaj na otpornost bakterija na antimikrobne lekove. Sve veća prevalencija visokorezistentnih *K. pneumoniae* i *A. baumannii* izolovanih iz uzoraka krvi verovatno je posledica veoma visokog procenta pacijenata na invazivnoj mehaničkoj ventilaciji, produženog boravka u jedinicama intenzivnog lečenja i neracionalne primene antimikrobnih lekova.

Ključne reči: Kovid-19, bolnicke infekcije, multirezistentne bakterije

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ABSTRACT

Background: During the current coronavirus disease (COVID-19) pandemic there are potential threats that could affect antimicrobial stewardship activities and drive antimicrobial resistance. For instance, many individuals presenting with mild disease without pneumonia or moderate disease with pneumonia receive antibiotics. Here we analysed how the presence of COVID-19 pandemic influenced the incidence and resitent rate of *Klebsiella pneumoniae* and *Acinteobacter baumanni* isolated from blood samples in a tertiary care hospital in Belgrade (Serbia), between March 15 and December 31, 2020.

Materials/methods: Identification and susceptibility testing were performed using the Vitek 2 system. The burden of resistance for each antibiotic was calculated as the percentage of all "Resistant" + "Intermediate Resistant" results among all tested isolates from all patients samples. Repeat isolates were excluded from the data. For analysis of susceptibility rates we used the WHONET 5.6 software.

Results: The bad capacities of whole hospital was 538.We included 3897 Covid-patients in the study with the median duration of hospital stay of 10.2 days and 39.6 Bad/Days. In the intensive care unit and on the invasive mechanical ventilation were 34.4% (1341/3897) and 13.2% (516/3897) patients, respectively.The total number of isolates was 2329. Positive blood culture was found in 660 of 3300 tested semples (20%). The total number of isolates of *K.pneumoniae* and *A. baumann* were 184 (7.9%) and 237 (11.9%), respectively. Positive blood culture to *K. pneumoniae* and *A. baumannii* were 35/660 (5.3%) and 93/660 (14.1%), respectively. *K. pneumoniae* from blood samples was resistent to amikacin (32.4%), gentamicin (88.2%), co-amoxiclav (81.8%), ampicillin/sulbactam (94.7%), piperacillin/tazobactam (97.1%), ceftazidim (97.1%), cefepim (97.1%), levofloxsacin (97.1%), trimethoprim/sulfamethoxazole (54.7%), ertapenem (94.1%), meropenem (81.9%), imipenem (44.1%), tigecycline (46.7%) and colistin (49%). *A. baumannii* from blood samples was resitent to all tested antimicrobials (100%), except amikacin (76.9%) and colistin (0%).

Conclusions: Coronavirus disease may have a complex long-term impact on antimicrobial resistance. The increasing prevalence of highly resistant *K. pneumoniae* and *A. baumannii* isolated from blood samples is probably due to the very high percent of patients on the invasive mechanical ventilation, prolong hospital stay and non-rational use of antimicrobials.

Key words: Covid-19, intrahospital infections, multiresistent pathogens

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MENTALNO ZDRAVLJE – KAKO LEČITI NAVIKE STEČENE TOKOM PANDEMIJE?

MENTAL HEALTH – HOW TO TREAT HABITS ACQUIRED DURING THE PANDEMIC?

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SAŽETAK

Covid/19 pandemija je do sada najveća kriza u našoj generaciji, sa značajnim zdravstveni, ekonomskim i socijalnim posledicama. Veliki broj ljudi je preminuo, izgubio najbliže ili i sam bio bolestan. Mnoge porodice, partneri i prijatelji su zbog karantina ili bolesti nekog od njih bili razdvojeni na duže vreme. Deca i mladi ljudi su imali nastavu online, što je uticalo na kvalitet učenja i onemogućilo na gotovo dve školske godine druženje u školi ili fakultetu. Zbog pandemije su mnogi ljudi osiromašili ili ostali bez posla. Bujale su teorija zavere vezane za sam virus i vakcine.

Sama infekcija viruson COVID-19, kao i socijalne i ekonomske posledice, bitno su uticali na mentalno zdravlje. Mnogi su odreagovali razvojem simptoma depresije, anksioznost, postraumatskog stresnog sindroma, a povećala se i stopa suicidalnih razmišljanja i ponašanja.

Došlo je do (šešće negativnih) promena nekih navika vezanih za ishranu, spavanje, fizičku aktivnost, provođenje vremena kraj ekrana. Nek navike su se, brže nego što smo očekivali, vratile na nivo pre epidemije, ali neke ostaju, kao što je online kockanje, online kupovina (pa i iliegalnih droga), online naručivanje hrane, upoznavanje, rad od kuće, čak i online psihoterapija.

Nije prošlo dovoljno vremena tako da za sada nismo u stanju da u potpunosti sagledamo sve dugoročne posledice pandemije, kao i to da li smo se vratili u staru normalnost, ili je ovo neka nova, u kojoj ćemo nadalje živeti.

Ključne reči: pandemija, mentalno zdravlje, COVID-19

ABSTRACT

Covid/19 pandemic is the largest crisis of our generation with significant health, economic and social consequences. A large number of people has passed away, lost their loved ones or gotten sick themselves. Many families, partners or friends were separated for longer periods due to quarantine or illness. Children and juveniles had online classes which affected their quality of learning and had robbed them of two school years of hanging out in schools or universities. People have become poor or lost their jobs due to the pandemic. Conspiracy theories regarding the virus and vaccines were rampant.

The COVID-19 virus infection as well as social and economic consequences had a significant effect on mental health. Many reacted by developing symptoms of depression, anxiety, Post-Traumatic Stress Disorder (PTSD) while the rate of suicidal thoughts and acts had also increased.

There were (mostly negative) changes of habits regarding nutrition, sleep, physical activity and spending time in front of a screen. Some habits have regressed, faster than expected, to levels before the pandemic, but some remain, such as online gambling, online shopping (even illegal drugs), online ordering of food, dating, work from home and even online psychotherapy.

Not enough time has passed to be able to completely see all the long-term effects of the pandemic and whether we have returned into our old normal or if this is a new normal which we will live in from now on.

Key words: pandemic, mental health, COVID-19

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PEDIJATRIJSKI NEUROPSIHIJATRIJSKI SINDROM S AKUTNIM POČETKOM (PANS): OSNOVNE SMERNICE ZA DIJAGNOSTIKU I LEČENJE

PEDIATRIC NEUROPSYCHIATRIC SYNDROME WITH ACUTE ONSET (PANS): GENERAL GUIDELINES FOR DIAGNOSIS AND TREATMENT

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SAŽETAK

U ovoj prezentaciji je dat kraći pregled osnovnih smernica za dijagnostiku i lečenje pedijatrijskog neuropsihijatrijskog sindroma sa akutnim početkom (PANS). PANS se odnosi na klinički entitet definisan naglim početkom neuropsihijatrijskih i somatskih simptoma, uz značajni gubitak funkcionisanja. PANS predstavlja akutni početak ili pogoršanje opsesivno-kompulzivnih (OKP) simptoma i/ili anoreksije u bliskoj vremenskoj vezi sa drugim teškim neuropsihijatrijskim i somatskim simptomima, kao što su anksioznost, emocionalna labilnost, razdražljivost, agresivnost, regresija, pogoršanje školskog učinka, senzorne i motoričke abnormalnosti, enureza, poremećaj spavanja i bolovi. Pedijatrijski autoimuni neuropsihijatrijski poremećaj povezan sa streptokoknom infekcijom (PANDAS) čini podgrupu pacijenata u okviru šireg PANS konstrukta, koji zahteva verifikovano prisustvo streptokokne infekcije, a što je vremenski povezano sa pojavom simptoma. Uglavnom se karakteriše iznenadnim pojavom simptoma OKP i/ili tikova, a često praćenih drugim izmenama u ponašanju. Dijagnoza PANS/PANDAS-a zahteva akutni početak, ali kasniji klinički tokovi mogu da variraju od potpunog povlačenja nakon jedne epizode, do toka rasta i opadanja sa intenzivnim egzacerbacijama, ili čak hroničnim ili progresivnijim tokovima. Početak simptoma je često vremenski povezan sa infekcijama ili drugom osnovnom autoimunom/autoinflamatornom etiologijom, iako direktni dokazi za to često nedostaju, a može postojati i genetska podložnost. PANS i PANDAS su nedavno dodati u MKB-11. Lečenje PANS/PANDS-a sledi multimodalni, multidisciplinarni pristup zasnovan na upotrebi antibiotika, NSAIL, kortikosteroida, intravenoznih imunoglobulina, imunomodulatornih lekova, razmeni plazme, tonzilektomiji, kognitivno bihejvioralnim pristupima i primeni neuropsihofarmaka.

Ključne reči: neuropsihijatrijski simptomi; autoimunost; infekcije.

ABSTRACT

This presentation gives an overview of the diagnostic and treatment guidelines of pediatric acute-onset neuropsychiatric syndrome (PANS). PANS refers to a clinical entity defined by the abrupt onset of neuropsychiatric and somatic symptoms and significant loss of functioning. PANS constitutes acute onset or worsening of obsessive-compulsive (OCD) symptoms and/or anorexia in temporal relation with other severe neuropsychiatric and somatic symptoms, such as anxiety, emotional lability, irritability/aggression, regression, deterioration in school performance, sensory and motor abnormalities, enuresis, sleep disturbance, and pain. Pediatric autoimmune neuropsychiatric disorder associated with streptococcal infection (PANDAS) constitutes a sub-group of patients within the broader PANS construct, which requires the verified presence of a streptococcal infection temporally associated with the onset of symptoms. It is mostly characterized by the sudden onset of OCD symptoms and/or tics, often accompanied by other behavioral symptoms. The diagnosis of PANS/PANDAS requires an acute onset, but subsequent clinical courses may range from fully remitting after a single episode, to a waxing and waning course with intense exacerbations or flares, or even more chronic or progressive courses. Symptom onset is often temporally associated with infections or other underlying autoimmune/autoinflammatory etiology, although direct evidence is often lacking, and genetic susceptibility is also suspected. PANS and PANDAS were recently added to the ICD-11. The treatment of PANS/PANDS follows a multimodal, multidisciplinary approach based on using antibiotics, NSAID, corticosteroids, intravenous immunoglobulin, immunomodulatory therapies, plasma exchange, tonsillectomy, cognitive behavior therapies, and neuropsychotropics.

Key words: neuropsychiatric symptoms; autoimmunity; infections.

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PSYCHIATRIC ASPECTS OF CENTRAL NERVOUS SYSTEM INFECTIONS

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SAŽETAK

Infektivna oboljenja centralnog nervnog sistema su ređa od demijelinizacionih, degenerativnih i neoplastičnih, ali je njihovo brzo i tačno dijagnostikovanje još bitnije, zbog uticaja koji pravovremena i ispravna dijagnoza ima na tretman i ishod bolesti.

Poseban osvrt zaslužuju psihijatrijska simptomatologija, diferencijalna dijagnoza i psihijatrijske komplikacije dve velike grupe infektivnih bolesti - polno prenosive bolesti, koje su aktuelno u značajnom porastu; i encefalitis, koji predstavlja naročit izazov za diferencijalnu dijagnostiku, ne samo u u psihijatriji.

Sifilis je kompleksna bolest sa ekstremno varijabilnim kliničkim tokom, te se naziva i *velikim imitatorom*. Neurosifilis se ispoljava nakon 5 i više godina od primarne infekcije, pogađa oko 10% nelečenih pacijenata i ima više kliničkih oblika: asimptomatski neurosifilis, meningovaskularni sifilis, progresivna paraliza, *tabes dorsalis* i dr. Klinička slika neurosifilisa je toliko varijabilna da se preporučuje rutinsko serološko testiranje kod svih hospitalizovanih pacijenata. Dijagnoza se potvrđuje serologijom krvi i likvora.

Herpes simpleks encefalitis se zbog neurotropnosti HSV1 virusa i zahvaćenosti medijalnih struktura temporalnih režnjeva u akutnoj fazi veoma često primarno prezentuje psihijatrijskom simptomatologijom, koja je prisutna kod više od dve trećine obolelih. Takođe, veoma često ostavlja ireverzibilne skvele, u prvom redu u kognitivnom domenu.

U diferencijalnoj dijagnozi u psihijatriji je najbitnije imati na umu mogućnost da je psihijatrijska simptomatologija tek sekundarna u odnosu na primarnu bolest, naročito u slučaju infekcija koje predstavljaju najčešći pojedinačni uzrok delirijuma. Stoga nikada nije na odmet podsetiti na zlatno pravilo u psihijatriji i medicini uopšte: *svaku naglu izmenu mentalnog stanja treba smatrati delirijumom dok se ne dokaže suprotno!*

Ključne reči: psihijatrija, encefalitis, polno prenosive bolesti.

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ABSTRACT

Infectious diseases of the central nervous system are less common than demyelinating, degenerative and neoplastic, but their quick and accurate diagnosis is even more important, because timely and accurate diagnosis strongly affect the treatment and outcomes. Psychiatric symptomatology, differential diagnosis and psychiatric complications of two large groups of infectious diseases - sexually transmitted diseases, deserve a special attention because they are currently in significant increase; as well as encephalitis, which represents a particular challenge for differential diagnosis, not only in psychiatry.

Syphilis is a complex disease with an extremely variable clinical course, and it is also known as *the great imitator*. Neurosyphilis manifestations tends to occur after 5 or more years after primary infection, occurs in about 10% of untreated patients and have several clinical forms: asymptomatic neurosyphilis, meningovascular syphilis, progressive paralysis, *tabes dorsalis*, etc. The clinical picture of neurosyphilis is so variable that routine serological testing is recommended for all inpatients. The diagnosis can be confirmed by blood and cerebrospinal fluid serology.

Herpes simplex encephalitis in the acute phase is very often primarily presented with psychiatric symptoms due to the neurotropic nature of the HSV1 virus and involvement of the medial temporal lobes structures, which is present in more than two thirds of patients. Also, very often leaves irreversible sequels, primarily in the cognitive domains.

In the differential diagnosis in psychiatry, it is most important to keep in mind the possibility that the psychiatric symptomatology is only secondary to the primary disease, especially in the case of infections that are the most common single cause of delirium. Therefore, it is never out of place to remind golden rule in psychiatry and medicine in general: *any sudden change in mental state should considered as delirium until proven otherwise!*

Key words: psychiatry, encephalitis, sexually transmitted diseases.

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SRPSKI medicinski časopis Lekarske komore
= Serbian journal of the Medical chamber / glavni i odgovorni urednik Milena Šantrić-Milićević. - [Štampano izd.]. - Vol. 1, br. 1 (sep. 2020)- . - Beograd : Lekarska komora Srbije, 2020- (Beograd : Donat graf). - 30 cm

Tromesečno. - Tekst na srp. i engl. jeziku. - Drugo izdanje na drugom medijumu: Srpski medicinski časopis Lekarske komore (Online) = ISSN 2737-9752
ISSN 2737-971X = Srpski medicinski časopis Lekarske komore (Štampano izd.)
COBISS.SR-ID 19685641