

Majmunske boginje u Srbiji 2022. godine sa prikazom slučaja i osvrtom na literaturu

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The case of monkeypox in Serbia in 2022 - case report and literature review

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Sažetak

Uvod. Virus majmunskih boginja (*MPXV*, *Monkeypox*, *Mpox*) pripada grupi ortopoks virusa (*Orthopoxvirus*), koji po svojim karakteristikama predstavljaju najveće i najkompleksnije viruse u virusologiji.

Prikaz bolesnika. Pacijent, muškarac, 28 godina, pregledan je u prijemnoj ambulanti opšte medicine. Tokom fizičkog pregleda uočene su kožne manifestacije - panaricijum na maloj falangi leve ruke, kao i dve makulo-papulozne lezije na dorzalnom korenu penisa. Fizički pregled je ukazivao da je potrebno ići u pravcu dokazivanja virusne infekcije tako da je naloženo da se uradi serološka dijagnostika na viruse. Pacijentu je savetovana simptomatska analgetsko-antipiretsko-antiinflamatorna terapija, vitaminska terapija, obrada kožnih promena uz 70% alkohol, 3% vodonik i 10% povidon-jodid, kao i primena antiviralnih masti. Panaricijum je tretiran drenažom uz lokalnu primenu antibiotika. Opšti simptomi su se smirili pet dana nakon primene terapije, a promene su epitelizovane 22. dana od pojavljivanja.

Zaključak. Doktor opšte medicine bi trebalo da se neprekidno usavršava kako bi prepoznao i manje prisutnu i zastupljenu patologiju, a posebno ako je u tom trenutku novina. Satisfakcija je kada svojim znanjem, trudom i zalaganjem prepozna bolesti, ublaži simptome, jer se prethodno upoznao sa patofiziologijom i slikom opisane nozološke celine.

Ključne reči: majmunske boginje, mpoks, epidemija, zarazne bolesti, infektivne bolesti

Abstract

Introduction. The Monkeypox virus (MPXV, also known as Mpox) is part of the Orthopoxvirus family, which includes some of the largest and most complex viruses studied in virology.

Case report. A 28-year-old male patient was examined in a general practitioner's office. During the examination, skin lesions were found, including a panaritium on the small phalanx of his left hand and two maculopapular lesions at the dorsal root of the penis. The physical examination indicated a viral infection, prompting the ordering of viral serology tests. The patient was advised to use symptomatic therapy, including analgesics, antipyretics, anti-inflammatory medications, and vitamins. For the skin lesions, he was instructed to apply 70% alcohol, 3% hydrogen peroxide, and 10% povidone-iodine, as well as antiviral creams. The panaritium was drained, and local antibiotics were used. General symptoms resolved five days after starting therapy, and the skin lesions fully epithelized within 22 days from the onset.

Conclusion. General practitioners should continuously improve their skills to recognize less common pathologies, particularly those that are newly emerging. Satisfaction comes from the ability to identify diseases and alleviate symptoms through dedicated knowledge, effort, and commitment. This is achieved by familiarizing oneself with the pathophysiology and clinical presentation of the relevant conditions.

Keywords: monkeypox, mpoks, epidemic, contagious diseases, infectious diseases

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Uvod

Dve godine nakon pandemije izazvane korona virusom (*COVID-19*) početkom 2020. godine, nakon opštih izolacija i zatvaranja granica, limitiranog kretanja i savetovane fizičke distance, 2022. godine smo bili pogođeni još jednom epidemijom koja se pojavila u senci *COVID-19* – epidemijom majmunskih boginja. Veliki problem je predstavljala priroda virusa da se širi u humanoj populaciji, iako su prethodna istraživanja govorila o limitiranosti transhumanog prenosa.

Mpox virusi

Virus majmunskih boginja (*MPXV*, *Monkeypox*, *Mpox*) pripada grupi ortopoks virusa (*Orthopoxvirus*), koji po svojim karakteristikama predstavljaju najveće i najkompleksnije viruse u virusologiji.

Ovaj virus je bio prisutan u zapadnim i centralnim afričkim zemljama, posebno Demokratskoj Republici Kongo. Sada se u literaturi navodi kao primarno endemska bolest u navedenim regijama sa slučajevima i u drugim zemljama sveta¹. Glavni rezervoar virusa majmunskih boginja su veverice, dok su drugi zaraženi domaćini majmuni, ljudi, životinje iz zoološkog vrta i prijevremeni psi². Smatralo se da se transmisija odvija u direktnom kontaktu sa obolelim životinjama, tako da je oboljenje kod čoveka bio usamljeni (sporadičan) slučaj. Slučajevi su se registrovali 1970. godine.

Nedavna istraživanja su otkrila da se virus u velikom procentu nalazi u telesnim tečnostima, uključujući urin, pljuvačku, spermu i feces, kao i u brisevima uzetim iz orofarinksa i rektuma, što sugerise da se ova infekcija prenosi primarno seksualnim putem i to dominantno kod homoseksualaca³.

Epidemiološki podaci

U izveštaju Svetske zdravstvene organizacije od 20. jula 2022. godine navodi se da je u svetu obolelo 10.604 slučaja gde su dominantno, sa preko 2.000 slučajeva po zemlji, pogođene Španija, Ujedinjeno Kraljevstvo i Nemačka. U izveštaju takođe stoji podatak da je u Srbiji registrovano pet obolelih⁴.

Koliko se brzo broj obolelih uvećavao govori i podatak objavljen u izveštaju Instituta za javno zdravlje Srbije „Dr Milan Jovanović Batut“ od 26. jula 2022. godine da je do tog trenutka u 75 zemalja registrovano 16.000 slučajeva, a u Republici Srbiji 10 potvrđenih slučajeva, osam na teritoriji Beograda i dva na teritoriji Vojvodine. Svi slučajevi su bili registrovani među osobama muškog pola uzrasta od 27 do 44 godine⁵.

U najnovijem izveštaju Svetske zdravstvene organizacije od 11. jula 2024. godine, koji sada izlazi kvartalno, govori se o 27.529 slučajeva *mpox* (ranije nazivani *monkeypox*). Najveći broj slučajeva su bili muškarci (98%), a najučestalije

Introduction

Two years after the COVID-19 pandemic began in early 2020, we faced a new epidemic in 2022: the monkeypox outbreak. This emerged in the aftermath of COVID-19, which brought about general isolation, border closures, limited movement, and physical distancing. A significant concern was that the monkeypox virus was spreading from human to human, despite previous research indicating that human-to-human transmission was limited.

Mpox viruses

The Monkeypox virus (MPXV, also known as Mpox) is part of the Orthopoxvirus family, which includes some of the largest and most complex viruses studied in virology.

The monkeypox virus was originally found in Western and Central African countries, particularly in the Democratic Republic of Congo. Nowadays, it is recognized in the literature as primarily an endemic disease in these regions, although cases have been reported in other parts of the world as well¹. The main reservoir of the monkeypox virus is squirrels, while other hosts include monkeys, humans, zoo animals, and prairie dogs². It is believed that transmission occurs through direct contact with an infected animal, which is why human cases were historically sporadic. The first cases were reported in 1970.

Recent research revealed that the virus is primarily found in bodily fluids, including urine, saliva, sperm, and feces, as well as in oropharyngeal and rectal swabs. This suggests that the infection is mainly transmitted through sexual contact, predominantly among homosexual individuals³.

Epidemiological data

A report from the World Health Organization, dated July 20th, 2022, revealed that there were 10,604 cases of the disease worldwide. Among these cases, Spain, the United Kingdom, and Germany each reported over 2,000 cases. Additionally, the report noted that there were five registered cases in Serbia⁴.

The number of disease cases has increased, and a report from the Institute for Public Health “Dr. Milan Jovanović Batut,” dated July 26, 2022, revealed that by that date, 16,000 new cases had been registered in 75 countries. Among these cases, there were 10 confirmed instances in the Republic of Serbia, with 8 reported in Belgrade and 2 in Vojvodina. All cases involved males aged between 27 and 44⁵.

The latest report from the World Health Organization, dated July 11, 2024, revealed that there were 27,529 cases of mpox (formerly known as monkeypox) reported. The majority of cases occurred among males (98%), with the most

kod onih od 31 do 40 godina starosti (39%). Bolest se manifestovala osipom (93%) i sistemskim simptomima kao što su groznica, umor, bol u mišićima, glavobolja (69%). Hospitalizovano je 885 slučajeva (7%) od kojih je 301 slučaj zahtevao kliničku negu. Osam obolelih je primljeno na intenzivnu terapiju, a 10 slučajeva je umrlo. U Srbiji je registrovano 40 slučajeva majmunske boginje⁶.

Patofiziologija

Primarno ulazno mesto predstavljaju mikroabrazije. *Mpox* se potom replicira na mestu inokulacije i širi na lokalne limfne čvorove. Početna viremija dovodi do širenja virusa i zasejavanja drugih organa. Mada je virus otkriven u pojedinim slučajevima u različitim organima, nejasan je razlog ovog nalaza.

Ovaj period inkubacije traje od pet do 21 dan⁷.

Bolest počinje nespecifičnim simptomima, kao što su groznica, cefalalgija, mialgija i umor. Nakon pojave eflorescenci javlja se limfadenitis koji može biti regionalan ili difuzan. U tom momentu pacijenti su zarazni.

Na koži se javljaju promene koje izgledaju kao makulopapulozna osipa, a na sluzokoži izgledaju kao aftozne ulceracije.

Osip se može proširiti na celo telo, tako da se broj kožnih promena može kretati od samo dve, tri do nekoliko hiljada⁸.

Tokom četiri nedelje lezije prolaze kroz stadijume od makule, papule, vezikule do pustule i kruste. Pustularna faza traje 5–7 dana pre nego pređe u formiranje kruste koje se ljušte posle sedam do 14 dana. U većini slučajeva 3–4 nedelje nakon pojave simptoma, kada kruste otpadnu, pacijenti nisu više zarazni.

Terapija i lečenje

Ne postoji specifična terapija za *mpox* infekciju. Terapija je simptomatska i suportivna, koja se individualno prilagođava.

Nekoliko antivirusnih lekova se u novijim radovima u laboratorijskim uslovima pokazalo efikasnim. Na prvom mestu se izdvaja tecovirimat (*Tpoxx*)⁹ koji je kod težih pacijenata primenjivan u kombinaciji sa brincidofovirom.

Prevenција

Postoje mere prevencije koje se odnose kako na pacijente, tako i na zdravstveno osoblje. Što se pacijenata tiče, inficirana osoba bi trebalo da bude u izolaciji, da nosi hiruršku masku i lezije drži pokrivene kako bi se sprečila autodiseminacija.

affected age group being individuals aged 31 to 40 years (39%). The disease primarily presented with a rash (93%) and systemic symptoms, including fever, malaise, muscle pain, and headache (69%). There were 885 hospitalized cases (7% of all cases), with 301 individuals requiring clinical care. Among those hospitalized, eight patients were admitted to Intensive Care Units, and there were 10 reported fatalities. Additionally, there were 40 cases of mpox in Serbia⁶.

Pathophysiology

The primary entry point for the infection is through microabrasions. Mpox begins to replicate at the site of inoculation and subsequently spreads to nearby lymph nodes. Viremia occurs, allowing the virus to disseminate and saturate various organs. The virus has been isolated in different organs across various cases, though the reason for this variation remains unknown.

The incubation period lasts between five to 21 days⁷.

The illness begins with nonspecific symptoms including fever, headache, myalgia, and malaise. Following the appearance of rashes, lymphadenitis may develop, either regionally or diffusely. At this point, patients become contagious.

The skin lesions may present as a maculopapular rash and as mucous lesions resembling aphthous ulcers.

The rash may spread across the entire body, resulting in skin lesions that can number from two or three to several thousand⁸.

Over the course of four weeks, the lesions progress through various stages: starting with macules, then moving to papules, followed by vesicles, and finally forming pustules and crusts. The pustular phase lasts for 5 to 7 days, after which it transitions to crust formation. The crusts typically begin to detach after 7 to 14 days. In most cases, patients are no longer contagious 3 to 4 weeks after the onset of symptoms, once the crusts have fallen off.

Therapy and treatment

There is no specific therapy for mpox infection; treatment is symptomatic, supportive, and tailored to each individual.

Recent research has shown that several antivirals are effective in a laboratory environment. Notably, tecovirimat (*Tpoxx*)⁹ was utilized in severe cases in combination with brincidofovir.

Preventive

Preventive measures apply to both patients and health workers. Infected individuals should be isolated, wear face masks, and cover any skin lesions to prevent autodissemination.

Vakcina protiv velikih boginja delimično deluje i protiv majmunske boginje (unakrsni imunitet). Od avgusta 2024. godine je u zemljama Evropske Unije, Ujedinjenog Kraljevstva, SAD, Švajcarskoj i Kanadi dostupna modifikovana Ankara vakcina – MVA-BN. Savremeni oblik MVA-BN razvijen je u Danskoj i proizvodi se od 2010. godine. Vakcina se daje u dve doze u razmaku od mesec dana¹⁰. U Rusiji se koristi *OrthopoxVac* koja je efikasna protiv svih *Orthopox* virusa¹¹⁻¹³.

Prikaz bolesnika

Pacijent, muškarac, 28 godina, pregledan je u ambulanti opšte medicine zbog visoke telesne temperature, malaksalosti i bolova u pazušnim jamama i preponama. Ordinirajući lekar mu je savetovao antibiotsku i vitaminsku terapiju. Dva dana nakon prvog pregleda bez postavljene dijagnoze od strane drugog doktora opšte medicine i lošijeg opšteg stanja, ponovo se javio – žalio se na malaksalost, bolove u mišićima i na povišenu telesnu temperaturu od 37.3oC prethodne večeri.

Pacijent dva dana kasnije zbog lošijeg opšteg stanja dolazi na ponovni pregled. Na prijemu bez povišene telesne temperature, iako je anamnestički prijavio da je prethodno veče bio subfebrilan.

Tokom fizikalnog pregleda uočene su kožne manifestacije – panaricijum na maloj falangi leve ruke, kao i dve makulo-papulozne lezije na dorzalnom korenu penisa (Slika 1). Takođe je uočeno da je pacijent sa razvijenom akutnom simptomatologijom: mialgijom, malaksalošću, kao i izraženim generalizovanim limfadenitisom.

The smallpox vaccine offers some level of cross-immunity against monkeypox, but it is only partially effective. Since August 2024, a modified vaccine known as the Ankara vaccine (MVA-BN) has been available in European countries, the United Kingdom, South Africa, Switzerland, and Canada. This updated version of MVA-BN was developed in Denmark and has been in production since 2010. The vaccine is administered in two doses, given one month apart¹⁰. Additionally, OrthopoxVac is used in Russia and is effective against all Orthopox viruses¹¹⁻¹³.

Case report

A 28-year-old male patient was examined in a GP's office because of high body temperature, malaise and pain in armpits and groin. The attending doctor advised him antibiotic and vitamin therapy. Two days after an initial examination by another GP, who did not provide a specific diagnosis, the patient came back for a check-up, due to worsening health condition, complaining of fatigue, muscle pain, and a fever of 37.3oC the previous evening.

Two days later, the patient returned for a check-up due to worsening health conditions. He was not febrile upon arrival, although he mentioned experiencing a subfebrile state the night before.

During the physical examination, several skin lesions were observed: a panaritium on the small phalanx of the left hand and two maculopapular lesions on the dorsal side of the penis root (see Picture 1). Additionally, the patient exhibited acute symptoms, including myalgia, malaise, and pronounced generalized lymphadenitis.



Slika 1. Inicijalni pregled / Picture 1. Initial overview

Fizikalni pregled je ukazivao da je potrebno ići u pravcu dokazivanja virusne infekcije, tako da je naloženo da se uradi serološka dijagnostika na viruse.

Laboratorijske analize krvi pokazale su virusnu infekciju WBC $5,210 \times 9/l$, Lym 18,2%, tj. $0,910 \times 9/l$, CRP $< 5 \text{ mg/L}$, tako da su analize proširene u tom pravcu i na serološka ispitivanja (Hepatitis B, Hepatitis C, HIV), pa i na sifilis, a pacijentu je savetovana izolacija, kao i antiseptični metod obrade kožnih manifestacija u kućnim uslovima kako bi se sprečilo proširivanje po celom telu. Panaricijum je tretiran drenažom zbog bola, otoka, crvenila i povišene lokalne temperature uz lokalnu primenu antibiotika.

Pacijentu je posle urađenih laboratorijskih nalaza, a pre uputa na Kliniku za infektivne i tropske bolesti savetovana simptomatska analgetsko-antipiretsko-antiinflamatorna terapija, vitaminska terapija, obrada kožnih promena uz alkohol, hidrogen i povidon-jodid, kao i primena antiviralnih masti.

S obzirom da je davao podatak o mogućem rizičnom seksualnom kontaktu, upućen je na Kliniku za infektivne i tropske bolesti, UKCS, kako bi izvršio ispitivanje RT-PCR na virus *Monkeypox*. Nakon urađenog orofaringealnog brisa, kao i briseva kožnih manifestacija, svi uzorci su bili pozitivni na virus majmunskih boginja.

Pacijentu je savetovano da ukoliko ima pruritusa izbegava češanje. Kako je pacijent bio u kućnoj izolaciji, objašnjen je antiseptički proces tretiranja kožnih manifestacija, kao i da je nakon dodirivanja promena obavezno pranje ruku kako bi se sprečila moguća autodiseminacija. Pored toga, pacijentu je savetovano mirovanje.

Nakon što je pacijentu predloženo da bi se njegov slučaj prikazao na stručnim skupovima i u sklopu naučnog rada, pacijent je potpisao saglasnost za obradu i zaštitu podataka.

U daljem toku sa pacijentom je održavan telemedicinski kontakt (Slika 2. i 3).

Laboratory tests indicated a viral infection, with results showing a white blood cell count of $5,210 \times 10^9/L$, lymphocytes at 18.2% ($0.910 \times 10^9/L$), and C-reactive protein (CRP) levels below 5 mg/L. As a result, further analyses focused on potential viral causes, including serological examinations for Hepatitis B, Hepatitis C, HIV, and syphilis. The patient was advised to isolate to prevent the spread of the infection and was instructed to care for skin lesions at home using antiseptic measures. Additionally, panaritium was treated through drainage due to symptoms such as pain, swelling, redness, and elevated local temperature, along with the local application of antibiotics.

After receiving his lab results and before being referred to the clinic for infectious and tropical diseases, he was advised to undergo symptomatic therapy. This included analgesics, antipyretics, anti-inflammatory medications, vitamins, and treatment for skin lesions using alcohol, hydrogen peroxide, and povidone-iodine, as well as antiviral creams.

Considering that he provided information about potentially risky sexual behavior, he was referred to the Clinic for Infectious and Tropical Diseases, UKCS for an examination for Monkeypox using the RT-PCR method. An oropharyngeal swab and skin lesion swabs were taken, and all samples tested positive for Monkeypox.

The patient was advised to avoid scratching the skin lesions. Since he was isolated at home, he was educated on how to treat the skin lesions using antiseptic measures. He was instructed to wash his hands after touching any lesions to prevent possible autodissemination. Additionally, he was advised to get plenty of rest.

The patient was informed that his case could be presented at scientific conferences as part of the research work, and he signed consent for data processing and protection.

Following the initial therapy, contact with the patient was maintained through telemedicine (see Pictures 2 and 3).



Slika 2. sedmi dan od pregleda, 12. dan od pojave / Picture 2. 7th day from examination, 12th day from appearance



Slika 3 13. dan od pregleda, 18. dan od pojave / Picture 3. 13th day from examination, 18th day from appearance

Opšti simptomi smirili su se pet dana nakon primene terapije, promene na dorzalnom korenu penisa su prolazile kroz faze da bi postale kruste koje su na kraju otpale, epitelizovale 22. dana od pojavljivanja (Slika 4).

General symptoms improved five days after treatment began. The lesions on the dorsal side of the penis root progressed through various phases, eventually forming crusts that fell off. By the 22nd day after their appearance, the lesions were fully healed (see Picture 4).



Slika 4. dodati: 17. dan od pregleda, 22. dan od pojave / Picture 4. 17th day from examination, 22nd day from appearance

Pacijent je u toku praćenja bio afebrilan, uvećane limfne žlezde su se smanjile, kao i bol limfnih žlezda koji je pacijent osećao. Na kontrolnom pregledu četiri nedelje od prvog pregleda (Slika 5) na mestu eflorescenci uočen je ožiljak, a pacijent je bio dobrog opšteg stanja.

During the follow-up, the patient was afebrile, and there was a noticeable reduction in the size of the enlarged lymph nodes as well as a decrease in the pain experienced by the patient. At the control check-up, four weeks after the first examination (see Picture 5), the lesions had been replaced by scars, and the patient reported feeling generally well.



Slika 5. 33. dan od pregleda, 38. dan od pojave (kontrolni pregled) / Picture 5. 33rd day from examination, 38th day from appearance (control examination)

Diskusija

Ovim prikazom slučaja sa osvrtom na literaturu i pretragom preko PubMed-a (sa ključnim rečima *monkeypox*, *mpox*, *orthopox viruses*, *infective medicine*, *infectology*, *PCR*, *skin manifestations*), kao i stranice WHO želimo da prezentujemo sopstveno iskustvo prilikom susreta sa pomenutom nozološkom celinom, a radi boljeg razumevanja evolucije i manifestacija bolesti. S obzirom na činjenicu da se radi o susretu sa infekcijom koja nije ranije u velikoj meri bila zastupljena na evropskom kontinentu, dok ga u našoj zemlji uopšte nije bilo, smatramo da je svaki opis od značaja za naučnu i širu medicinsku zajednicu. Pored toga, treba naglasiti da su manifestacije kod opisanog pacijenta bile potpuno nespecifične kada se uzmu u obzir smernice i opisi iz zemlje i sveta.

Majmunske boginje su prvi put izolovane i identifikovane 1958. godine kada su von Magnus i dr. ustanovili da su rakojed-makaki majmuni oboleli od ove infekcije, a nakon što su iz Singapura dopremljeni u Kopenhagen¹⁴. Dvanaest godina potom, 1970. godine, šest potvrđenih slučajeva obolavanja ljudi zabeleženo je u Demokratskoj Republici Kongo (tadašnji Zair), Sijera Leoneu i Liberiji (starosti od devet meseci do 24 godine)¹⁵.

Diferencijalno dijagnostički treba razjasniti o kojoj infekciji se radi s obzirom da majmunske boginje mogu nalikovati na male boginje, velike boginje, diseminovani zoster, varicelu, diseminovani herpes simplex, sifilis, šugu, bakterijske infekcije kože i kožne alergijske reakcije na lekove¹⁰.

Na majmunske boginje se sumnja i onda kada postoje epidemiološki kriterijumi od kojih pacijent ispunjava bar jedan: da je imao blizak ili intiman kontakt sa osobama iz svog

Discussion

We presented this case report by consulting literature and conducting research through PubMed, using keywords such as monkeypox, mpox, orthopox viruses, infectious medicine, infectology, PCR, and skin manifestations. Additionally, we referred to the WHO website to share our experience with this disease and enhance the understanding of its evolution and manifestations. Given that we encountered an infection that is relatively uncommon in European countries and particularly rare in our own, we believe that every description adds value to the scientific and broader medical community. Furthermore, we want to emphasize that the manifestations observed in our patient were completely nonspecific when compared to existing guidelines and descriptions from our country and around the world.

Monkeypox was first isolated and identified in 1958 when von Magnus et al. confirmed that crab-eating macaque monkeys suffered from this infection after they were delivered from Singapoure to Copenhagen¹⁴. Twelve years later, in 1970, six confirmed cases in people were found in Democratic Republic of Congo (known as Zair at the time), Sierra Leone, and Liberia (aged from 9 months to 24 years)¹⁵.

Differential diagnosis should include the type of infection being considered, as monkeypox may resemble smallpox, variola, disseminated zoster, varicella, disseminated herpes simplex, syphilis, scabies, bacterial skin infections, and allergic skin reactions to medications¹⁰.

Monkeypox is suspected in patients who meet specific epidemiological criteria. A patient may be considered at risk if they have had close or intimate contact with someone who

društvenog okruženja koji imaju majmunske boginje, da je putovao u zemlje u kojima ima potvrđenih slučajeva obolelih od majmunskih boginja, da je imao kontakt sa osobama koje imaju slične ospe po koži ili da je bio u kontaktu sa živim ili mrtvim životinjama koje se smatraju endemskim afričkim vrstama¹⁶.

Virusološkim analizama je viđeno da postoje dva soja *Mpox* virusa koji se razlikuju po intenzitetu bolesti koji izazivaju. U centralnim afričkim zemljama javlja se tzv. centralno-afrički tip („*clade I*“) koji je po kliničkoj slici fatalniji i sa većom stopom letaliteta, dok se u Gvineji, Kamerunu, Nigeriji, Gani, Liberiji, Sijera Leoneu i Gabonu javlja tzv. zapadno-afrički tip („*clade II*“) sa nižom stopom letaliteta i povoljnijom kliničkom slikom. Ovu podelu je važno istaći, jer postoji opravdana bojazan zbog toga što je centralno-afrički tip teži, a prvi slučaj centralno-afričkog tipa virusa majmunskih boginja registrovan je u Švedskoj jula 2024. godine¹⁷.

Prvobitna epidemija se širila među populacijom homoseksualaca direktnim kontaktom i seksualnim putem, dok se trenutno smatra da su u većem riziku za obolevanjem deca i trudnice, kao i da je prisutna veća stopa smrtnosti kod pomenutih populacija. U prilog tome govori činjenica da su deca slabijeg imunološkog statusa, a pored toga eksponiraniji su fizičkom kontaktu u školama i kroz igru. Ne treba zanemariti i to da pojedine dečije zarazne bolesti mogu biti slične majmunskim boginjama, tako da same majmunske boginje ostaju neprepoznate usled sličnosti sa malim boginjama, a simptomi kao što su groznica, umor, visoka telesna temperatura, glavobolja, osip i lezije po celom telu takođe se mogu pripisivati diferencijalnim dijagnozama.

U teškim slučajevima, majmunske boginje mogu dovesti i do sepse što predstavlja urgentno medicinsko stanje¹⁸.

Zdravstveni i laboratorijski radnici su u povećanom riziku od obolevanja zbog direktnog kontakta sa obolelima ili materijalom koji se upućuje na analiziranje. Stoga je potreban veći oprez kod ovih grupa. Ne treba zaboraviti i vakcinaciju kao specifičnu meru prevencije, još više iz razloga što su ranije studije pokazale da su velike boginje eradikovane.

Činjenica da je pacijent sa ovako diskretnim ponašanjem pregledan u ambulanti opšte prakse ukazuje na neopходnost strpljivog uzimanja anamneze i detaljnog fizikalnog pregleda na prvom mestu.

has monkeypox, traveled to countries with confirmed cases of the virus, come into contact with individuals exhibiting similar skin rashes, or interacted with animals, either dead or alive, that are considered endemic to African regions¹⁶.

Virological analyses have confirmed the presence of two strains of the *Mpox* virus, which differ in the intensity of the disease they cause. In Central African countries, the “clade I” type, also known as the Central African type, is found. This strain is associated with a more severe clinical presentation and a higher mortality rate. In contrast, “clade II,” or the West African type, is present in Guinea, Cameroon, Nigeria, Ghana, Liberia, Sierra Leone, and Gabon, and it is associated with a lower mortality rate and more favorable clinical outcomes. This distinction is significant, especially given the reasonable concerns that arose because the Central African type is more severe, and the first case of the Central African type of monkeypox virus was registered in Sweden in July 2024¹⁷.

The primary spread of the epidemic occurred among the homosexual population through direct sexual contact. Currently, children and pregnant women are considered to be at higher risk, and these groups experience greater mortality rates related to the disease. This heightened risk can be attributed to several factors: children have weaker immune systems and are more likely to be exposed due to increased physical contact in schools and during playtime. It is also important to note that some infectious diseases in children may present symptoms similar to those of monkeypox. Consequently, monkeypox can go unrecognized because its symptoms—such as fever, malaise, headache, rash, and lesions all over the body—can be mistaken for other conditions like smallpox or other differential diagnoses.

In severe cases, monkeypox may lead to sepsis, which is a medical emergency¹⁸.

Health and laboratory workers are at a higher risk due to their direct contact with infected individuals or materials that are sent for analysis. Therefore, these groups require increased precautions. Vaccination should not be overlooked as a specific preventive measure, especially since earlier studies have shown that variola was eradicated.

The examination of a patient with discrete lesions highlights the necessity of taking a detailed patient history and conducting a thorough physical examination in a general practitioner’s office.

Zaključak

Doktor opšte medicine bi trebalo da se neprekidno usavršava kako bi prepoznao i manje prisutnu i zastupljenu patologiju, a posebno ako je u tom trenutku novina. Satisfakcija je kada svojim znanjem, trdom i zalaganjem prepozna bolesti, ublaži simptome, jer se prethodno upoznao sa patofiziologijom i slikom opisane nozološke celine. Terapija podrazumeva brzu i kompleksnu, kao i odgovarajuću reakciju doktora u smislu prepoznavanja bolesti, ublažavanja tegoba i sprečavanja širenja zaraze, što bi uostalom moralo da bude neprekidno u biće svakog doktora koji teži da bude dobar dijagnostičar.

Conclusion

General practitioners should continuously improve their skills to recognize less common pathologies, particularly those that are newly emerging. Satisfaction comes from the ability to identify diseases and alleviate symptoms through dedicated knowledge, effort, and commitment. This is achieved by familiarizing oneself with the pathophysiology and clinical presentation of the relevant conditions. Effective therapy requires a quick, accurate response from the physician, involving the recognition of the disease, alleviation of symptoms, and prevention of further spread. These elements should be fundamental to every physician striving to be an excellent diagnostician.

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