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Empijem pleure kao komplikacija Kovid 19 pneumonije kod pacijenta sa destroyed lung sindromom

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Sažetak

Uvod. *Destroyed lung* sindrom je teško razaranje plućnog parenhima usled infekcije pluća, najčešće uzrokovan tuberkulozom. Pored tuberkuloze, i nekrotizujuća pneumonija može dovesti do ove komplikacije. Empijem pleure je česta posledica *destroyed lung* sindroma. Empijem pleure može se javiti i u toku Kovid-19 infekcije, i u negativnoj je povezanosti sa povoljnim ishodom lečenja.

Prikaz slučaja. Muškarac u pedesetim godinama pojavio se na dežurstvu u toku zimskog talasa Kovid-19 pandemije sa izveštajem iz prijemne internističke ambulante. U okviru lične anamneze od bolesnika se dobija podatak da je pulmektomisan 2016. godine. Tokom prethodna dva meseca lečen je od upale pluća i Kovid-19 infekcije antibiotskom i kortikosteroidnom terapijom. Zbog produžene malaksalosti i tahikardije izabrani lekar ga upućuje na ponovno snimanje pluća i laboratorijsku dijagnostiku. Po pristizanju rezultata, uočena je efuzija pleure na rendgenskom snimku pluća, te je upućen na hitan pregled u dežurnu bolnicu. Dežurni lekar, nakon uvida u izveštaj iz bolnice, konsultuje internistu i bolesnik biva poslat grudnom hirurgu. Hospitalizovan je zbog empijema pleure i lečen torakalnom drenažom uz pomoć sistema za aktivnu aspiraciju. Godinu dana kasnije oseća se dobro, povratio je apetit i telesnu masu sa povremenim curenjem iz torakalne fistule.

Zaključak. Prikazan je slučaj recidivirajućeg empijema pleure kod osobe pulmektomisane zbog nekrotizujuće upale pluća i *destroyed lung* sindroma, komplikovanog Kovid-19 infekcijom. Cilj prikaza bio je da se skrene pažnja lekarima u opštoj medicini na bolesti ili komplikacije bolesti koje se retko viđaju i ne leče na primarnom nivou zdravstvene zaštite.

Ključne reči: *destroyed lung* sindrom*,* empijem pleure, Kovid-19

Pleural empyema as a complication of COVID 19 pneumonia in a patient with destroyed lung syndrome

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Abstract

Introduction. *Destroyed lung* syndrome is a severe destruction of the pleural parenchyma due to lung infection, mostly caused by tuberculosis. Besides tuberculosis, necrotizing pneumonia may also lead to this disease complication. Pleural empyema is a frequent consequence of the *destroyed lung* syndrome. Pleural empyema may occur during the COVID-19 infection and is negatively correlated with a favorable disease outcome.

Case report. A male 50 y/o showed up during the on-call shift during the winter COVID-19 wave with a medical report from the Internal medicine clinic. His personal history is significant for his pneumonectomy in 2016. In the past two months, he had been treated for pneumonia and COVID-19 infection with antibiotics and corticosteroid therapy. Due to prolonged malaise and tachycardia his GP referred him to yet another chest X-ray and lab work. The chest X-ray showed pleural effusion, so he was promptly referred to an on-call hospital. The on-call physician, after looking into the hospital reports, consulted an internal medicine doctor and it was decided to refer the patient to a thoracic surgeon. He was hospitalized for pleural empyema and treated with thoracic drainage using the system of active aspiration. A year later, he feels well, and he regained his appetite, and body mass, with occasional leaking from the thoracic fistule.

Conclusion. This case report shows a recurrence of pleural empyema in a patient with pneumonectomy due to necrotizing pneumonia and *destroyed lung* syndrome, complicated by COVID-19 infection. We aimed to draw the attention of GPs to diseases and disease complications that are rarely met in GP practice and are not otherwise treated on the primary healthcare level.

Keywords: *destroyed lung* syndrome*,* pleural empyema, COVID-19

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Uvod

Destroyed lung sindrom se definiše kao potpuno uništeno plućno tkivo usled ponovljene ili hronične infekcije pluća[1]. Najčešći uzrok koji dovodi do ovakvog ishoda je tuberkuloza, potom slede uznapredovali stadijum bronhiektazija i nekrotizujuća pneumonija. Ne tako često, kao uzrok se navode hipoplazija pluća, aktinomikoza, gangrena pluća ili infekcija atipičnim mikobakterijama[1]. Komplikacije mogu biti vrlo ozbiljne, poput masivne hemoptizije, septikemije ili levo-desnog šanta. Empijem pleure opisan je kao komplikacija ovog sindroma sa promenljivom učestalošću od 23 do 30%[1].

Kovid-19 pneumonija se takođe može zakomplikovati efuzijom pleure (pleuralnim izlivom)[2,3]. Najnoviji podaci iz literature navode da je učestalost pleuralnih efuzija (PE) u toku Kovid-19 bila oko 10%, uz znatno lošiju prognozu u odnosu na obolele bez PE[3]. Bez mogućnosti dopunske dijagnostike, izuzetno je teško utvrditi uzrok gnojnog procesa na pleuri, što produžava vreme lečenja i dodatno stresira organizam obolelog dovodeći do fizičkog i psihičkog iscrpljenja[4]. Prema podacima Instituta za javno zdravlje Srbije (IZJZS), broj obolelih od akutnih zaraznih bolesti (grip i Kovid-19) u 2020. godini iznosio je 268.998, dok je u 2021. godini porastao na 687.257. Od navedenog broja u 2020. godini je 212.339 bilo pozitivno na Kovid-19, dok je u 2021. godini taj broj iznosio 684.364, trostruko više[5]. Sa skretanjem razvoja virusa ka Omikron soju, te posledičnim bržim širenjem infekcije[6], preopterećenost zdravstvenog sistema dovela je do otežane propustljivosti ka višim nivoima zdravstvene zaštite, što je produžilo vreme postavljanja dijagnoze i odgovarajućeg lečenja pacijenata[7].

Prikaz slučaja

Osoba muškog pola, u pedesetim godinama, javlja se na dežurstvo, vikendom, u ambulantu Doma zdravlja Zemun, u februaru 2022. godine, tokom zimskog talasa Kovid-19 pandemije. Donosi izveštaj iz prijemne internističke ambulante (PIA) dežurne bolnice, gde je upućen od strane izabranog lekara, a nakon urađenog rendgenskog snimka (RTG) grudnog koša na kome je opisan pleuralni izliv.

U okviru lične anamneze, od bolesnika je dobijen podatak da mu je 2016. godine zbog tuberkuloze pluća uklonjeno desno plućno krilo. Naknadnim uvidom u dostupnu medicinsku dokumentaciju saznaje se da je u junu navedene godine hitno hospitalizovan na Kliniku za pulmologiju, Kliničkog centra Srbije, zbog nekrotizujuće pneumonije i *destroyed lung* sindroma, nakon čega je u novembru te godine učinjena pulmektomija desnog plućnog krila. Nakon toga kontrolisan je od strane pulmologa, hematologa i neuropsihijatra zbog situacionog somatoformnog poremećaja.

Introduction

Destroyed lung syndrome is defined as a completely destroyed lung tissue due to recurrent or chronic lung infections[1]. The most common cause leading to such an outcome is tuberculosis, followed by advanced bronchiectasis, and necrotizing pneumonia. Once in a while, the cause may be pulmonary hyperplasia, actinomycoses, pulmonary gangrene, or infection with atypical mycobacteriae[1]. Disease complications may be very serious, such as massive haemoptysis, septicemia, or left-right shunt. Pleural empyema is described as a complication of this syndrome with a varying incidence of 23 to 30%[1].

COVID-19 pneumonia may also be complicated by pleural effusion[2,3]. The newest literature data show the incidence of pleural effusions (PE), during COVID-19, was around 10%, with a significantly worse prognosis compared to those without PE[3]. Without the possibility of additional diagnostics, it is very difficult to establish the cause of the purulent process on the pleura, which in turn prolongs treatment duration and additionally stresses the body of the patient, leading to physical and psychic exhaustion[4]. According to the data of the Public Health Institute of Serbia (PHIS), the number of patients suffering from acute respiratory diseases (flu and COVID-19) in 2020 was 268.998, while in 2021 it rose to 687.257. Out of the number from 2020, 212.339 were COVID-19 positive, while in 2021 the number was three times higher - 684.364[5]. With the evolution of the virus to the Omicron strain and the consequential faster spread of the infection[6], overburdening of the health system led to harder permeability to the higher levels of the healthcare system, which consequently prolonged the time to diagnosis and appropriate patient treatment[7].

Case report

A male 50 y/o presented during the on-call shift, on the weekend, at the office of the Primary Healthcare Center Zemun, in February 2022, during the winter COVID-19 wave. He brought a medical report from the Internal medicine clinic of the on-call hospital, where he was referred by his GP, and after the chest X-ray (CXR) which showed pleural effusion.

His personal history was significant for the surgical removal of his right lung due to tuberculosis in 2016. An additional look into the available medical records showed that he was urgently hospitalized at the Pulmonology Clinic of the Clinical Center of Serbia, in June 2016 due to necrotizing pneumonia and *destroyed lung* syndrome. In November, of the same year, a pneumonectomy of the right lung was performed. Afterward, he had regular controls with his pulmonologist, hematologist, and neuropsychiatrist due to situational somatoform disorder.

Istorija bolesti

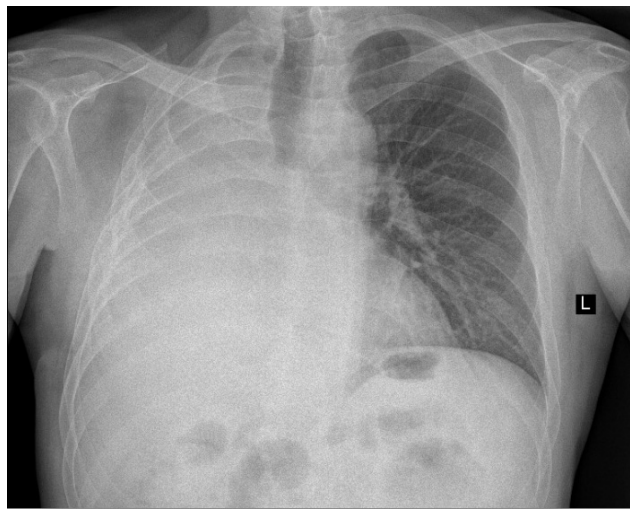
U decembru 2021, kako stoji u zapisu koji je uneo izabrani lekar, došao je po redovnu terapiju, donevši sa sobom laboratorijske nalaze u kojima je uočena blaga leukocitoza: Le 12,1 x 10^9/L, Er 4,52 x 10^{12}/L, Hgb 128 g/L, Tr 475 x 10^9/L, Grn 77%, Mo 16,2%, Ly 10,7%. Propisana je antibiotska terapija cefalosporinom treće generacije, zbog verovatnog pogoršanja hronične opstruktivne bolesti pluća (J 44.9). Na kontroli nakon nedelju dana broj leukocita bio je u padu ali su se održavali povišena sedimentacija eritrocita (SE) i vrednosti C-reaktivnog proteina (CRP): Le 9,3 x 10^9/L, Er 4,71 x 10^{12}/L, Tr 569 x10^9/L, SE 80 mm/h, CRP 75,2 mg/L. Od tegoba je tada naveo kašalj i povišenu temperaturu, u rangu subfebrilnih. Upućen je u Kovid ambulantu, gde ga je dežurni lekar pregledao i testirao na Kovid-19. U toku navedene posete opisan je sledeći fizikalni nalaz: "Subfebrilan (37º C), saturacija kiseonika u krvi (SaO_2) 99%, grlo mirno, levo na plućima pooštren disajni šum. Brzi antigenski i PCR test na SARS-CoV-2 virus negativni". Nije propisan antibiotik.

Nakon 11 dana, u januaru 2022. javio se na kontrolni pregled izabranom lekaru. Tegobe u vidu subfebrilnosti i povremenog kašlja su se održavale. Ponovljena je laboratorijska analiza krvne slike i urađen snimak pluća. Leukociti su bili "mirni", SE u padu, ali je registrovan porast broja trombocita i CRP: CRP 98 mg/L, Le 9,2 x 10^9/L, Er 4,19 x 10^{12}/L, Hgb 122 g/L, Tr 580 x 10^9/L, SE 66 mm/h. Na radiografiji pluća opisano je smanjenje transparencije levog plućnog krila, verovatne zapaljenske etiologije (Slika 1). Ponovo je upućen u Kovid ambulantu, gde mu je uključena dvojna antibiotska terapija (cefalosporin, fluorohinolon), uz novu dijagnozu potvrđene Kovid-19 infekcije. Deset dana kasnije, na kontrolnom pregledu, zbog izražene klonulosti i umora, nakon ponovljene radiografije pluća (Slika 2) biva upućen u dežurni KBC, gde mu je propisana oralna kortikosteroidna terapija. Na kontroli, posle devet dana, osećao se dobro. Vrednost CRP bila je neznatno preko referentne (6 mg/L). Savetovan je da ispije terapiju po datoj šemi.

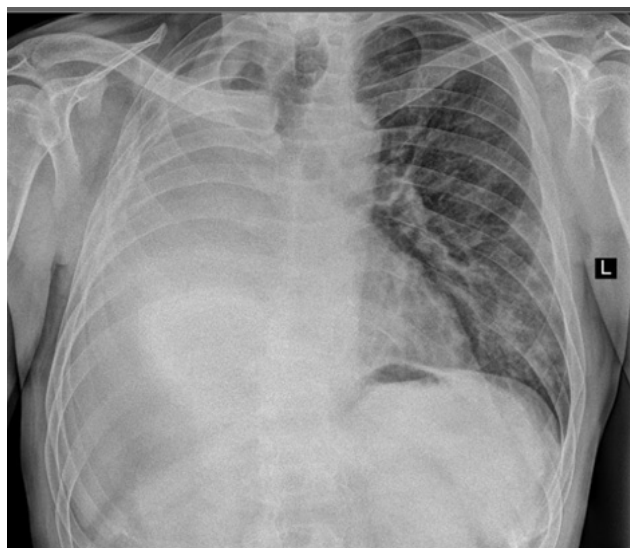
History of present illness (HPI)

In December 2021, as noted in the GP medical records, he came for his regular medications, and he brought some lab work where slight leukocytosis was noticed: Le 12,1 x 10^9/L, Er 4,52 x 10^{12}/L, Hgb 128 g/L, Plt 475 x 10^9/L, Grn 77%, Mo 16,2%, Ly 10,7%. The antibiotic was prescribed, cephalosporin of the third generation, due to the possible worsening of his chronic obstructive pulmonary disease (J44.9). The follow-up lab work, after seven days, showed the number of leucocytes was falling, but the erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) remained elevated: Le 9,3 x 10^9/L, Er 4,71 x 10^{12}/L, Plt 569 x10^9/L, ESR 80 mm/h, CRP 75,2 mg/L. His signs included cough and fever (subfebrile). He was referred to the COVID outpatient clinic where the on-call physician tested him for COVID-19 infection. During this visit the following physical findings were noted:"Subfebrile (37ºC), oxygen saturation (SaO_2) 99%, throat without hyperemia, bronchovesicular breathing above his left lung. Rapid antigen test and PCR for SARS-CoV-2 virus were negative". Antibiotic was not prescribed.

In January 2022, after 11 days, he showed up for a follow-up at his GP`s. His symptoms, such as subfebrile temperatures and occasional cough were still present. His lab work and CXR were repeated. Leukocyte count was normal, ESR was lower but platelet count and CRP were on the rise: CRP 98 mg/L, Le 9,2 x 10^9/L, Er 4,19 x 10^{12}/L, Hgb 122 g/L, Plt 580 x 10^9/L, ESR 66 mm/h. The chest X-ray showed decreased transparency of the left lung, probably due to inflammation (Figure 1). He was again referred to the COVID outpatient clinic, where 2 antibiotics were prescribed (cephalosporin, fluoroquinolone), for the newly diagnosed and confirmed COVID-19 infection. Ten days later, at his follow-up, due to extreme fatigue and malaise, and after a new CXR (Figure 2), he was referred to Clinical Hospital Center, where he was prescribed oral corticosteroid therapy. At the follow-up, after 9 days, he felt well. CRP level was slightly above normal (6 mg/L). He was advised to continue with his medication following the prescription scheme.



Slika 1. Inicijalna radiografija srca i pluća, januar 2022. Desno jednostrano ‘’svetlo’’ plućno krilo. Levo parakardijalno nehomogeno smanjenje transparencije najpre inflamatorne etiologije. Levi kostofrenični sinus (KFS) transparentan.
Figure 1. *The initial chest X-ray in January 2022. On the right decreased transparency of the entire lung. Paracardial reduction of transparency most likely due to inflammation on the left.*



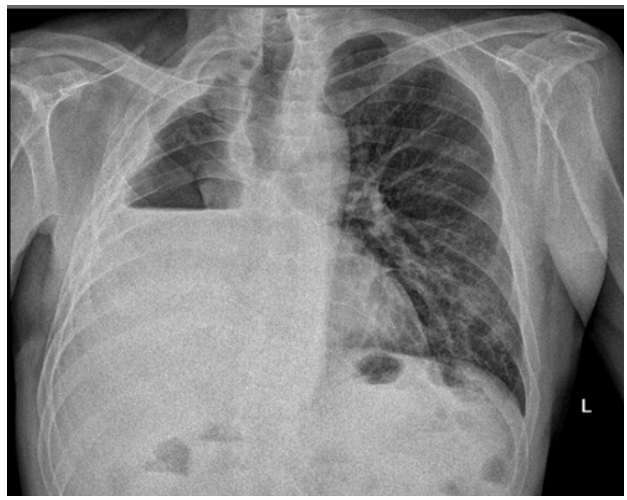
Slika 2. Radiografija srca i pluća - kontrolni snimak u Kovid ambulanti. Levo u srednjem i donjem plućnom polju prisutna nehomogena zasenčenja pneumonijskog karaktera. Levi KFS transparentan.
Figure 2. *Control imaging chest X-ray in Covid-respiratory unit. Inhomogenous shadings due to pneumonia are present in the middle and lower area of the left lung.*

U februaru mesecu, sedam dana od završetka lečenja u Kovid ambulanti, još uvek pod terapijom oralnim kortikosteroidima, javlja se ponovo izabranom lekaru zbog zamaranja i tahikardije. Tada ga izabrani lekar šalje da uradi ponovni snimak srca i pluća, i laboratorijske pretrage, nakon čega hitno biva upućen u dežurnu bolnicu (Slika 3). Po povratku sa pregleda iz bolnice, bolesnika prima dežurni lekar i u elektronski karton unosi sledeće podatke: ”Donosi izveštaj iz PIA dežurnog KBC, gde je upućen zbog patološkog nalaza na snimku

In February, 7 days after he had finished his treatment in the COVID outpatient clinic, and still taking oral corticosteroids, he presented with his GP due to malaise and tachycardia. The GP referred him to repeat the CXR and lab work. Afterwards, he was urgently sent to the on-call hospital (Figure 3). Upon his return from the hospital, the patient was seen by the on-call physician who entered these data in his electronic health records (EHR):”He brings the medical report from the internal medicine clinic of the CHC, where he was referred

nakon Kovid pneumonije. Saturacija O_2 94–97%, Fr 125/min, navodi da se bolje oseća. Na snimku pluća od pre pet dana prisustvo vazduha u gornjoj trećini levog plućnog polja (pulmektomisan desno), suspektne na pneumotoraks. Savetovan da se odmah javi grudnom hirurgu, rekao da se bolje oseća i da će ići sutra kod pulmologa" (Slika 3). Uvažavajući bolesnikovu odluku, dežurni lekar ga je posavetovao da se u slučaju pogoršanja javi odmah na pregled grudnom hirurgu u Urgentni centar, Univerzitetskog kliničkog centra Srbije (UC UKCS). Prateći laboratorijski nalazi: Le 16,1 x 10^9/L, Grn 89,9%, Ly 5,2%, Mo 4,2%, Er 54,8 x 10^{12}/L, Hgb 136 g/L, MCV 85,1 fl, Tr 576 x 10^9/L, SE 16 mm/h, CRP 1,7 mg/L. Sutradan se javio na kontrolu istom lekaru, koji ga je primio na dežurstvu, sa izveštajem pulmologa. Kortikosteroidna terapija je obustavljena. Zbog radiografskog nalaza zatraženo je mišljenje interniste u ustanovi. Nakon ponovljenog snimka pluća, po savetu interniste, obavljen je ponovni razgovor sa bolesnikom, te je upućen grudnom hirurgu.

due to the pathological findings on his CXR after COVID pneumonia. Oxygen saturation was 94–97%, HR 125 beats/min, and he said he was feeling better. His CXR, from 5 days ago, showed air in the upper third of the left thoracic cavity (pneumonectomy was performed on his right one), which was suspected of pneumothorax. He was advised to see a thoracic surgeon, right away, but he said he was feeling better and he would see a pulmonologist tomorrow." (Figure 3). Respecting the patient`s decision, the on-call physician advised him to visit the thoracic surgeon in the ER of the University Clinical Center of Serbia, as soon as possible, in the case of the worsening of his symptoms. Current lab results: Le 16,1 x 10^9/L, Grn 89,9%, Ly 5,2%, Mo 4,2%, Er 54,8 x 10^{12}/L, Hgb 136 g/L, MCV 85,1 fl, Plt 576 x 10^9/L, ESR 16 mm/h, CRP 1,7 mg/L. Tomorrow, he visited the same on-call physician he saw the previous day, with a medical report from a pulmonologist. Corticosteroid therapy was discontinued. Due to CXR findings, the internal medicine physician`s opinion was asked for. After the repeated CXR, on the internal medicine physician`s advice, the patient was strongly advised to see a thoracic surgeon, which he did.



Slika 3. Radiografija srca i pluća februar 2022. Desno pleuralni izliv sa prisustvom vazduha u gornjoj trećini plućnog polja.
Figure 3. *Chest X-ray in February 2022. Pleural effusion with air collection u the upper one-third of the right pulmonal cavity.*

Mesec dana kasnije, u martu, zbog empijema pleure desno sa kolekcijom u zidu desnog hemitoraksa hospitalizovan je na Klinici za grudnu hirurgiju. Lečen je torakalnom drenažom uz pomoć sistema za aktivnu aspiraciju. Na otpustu je zaključeno da su radiografski i radioskopski nalazi na plućima zadovoljavajući uz rezidualnu anemiju sa očuvanom gasnom razmenom.

U junu mesecu 2022, isti internista koji je u februaru konsultovan pre upućivanja grudnom hirurgu, obavlja kontrolni pregled: "Dobro se oseća. Rana i dalje secenira. Apetit

In March, a month later, he was hospitalized for pleural empyema in the right thoracic wall at the Thoracic Surgery Clinic. He underwent thoracic drainage with the assistance of an active aspiration system. At his discharge, it was concluded his radiographic and radioscopic lung findings were satisfactory, with residual anemia but preserved gas exchange.

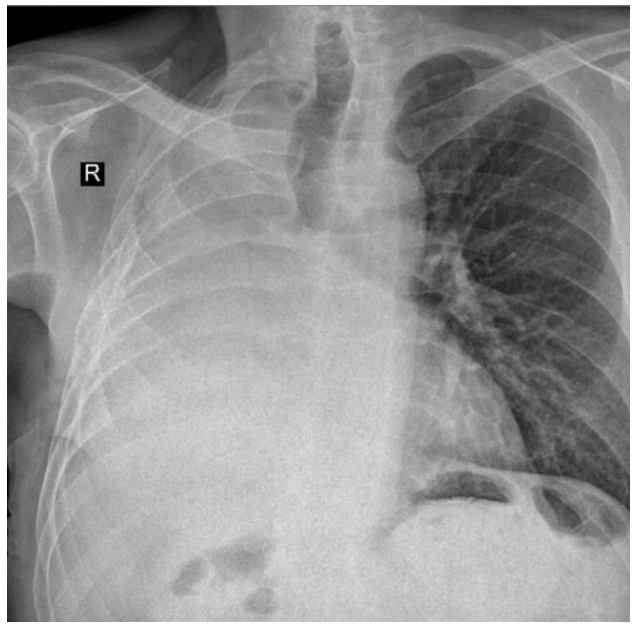
In June 2022, the same internal medicine physician, who was consulted in February, before his referral to a thoracic surgeon, performed a follow-up exam: "He feels good. The wound is still leaking. He gained his appetite back (lost

mu se povratio (izgubio 20 kg tokom lečenja). EKG: sinusni ritam, fr 89/min, pq 200, negativan T u D3, nema dinamike ST i T; TA 110/70 mmHg. Disanje vezikularno levo, nečujno desno. Srčana akcija ritmična, tonovi tiši. Nema organomegalije, ni edema od značaja". Prateći laboratorijski nalaz: SE 34 mm/h, Le 7,5 x 10^9/L, Grn 62%, Ly 22,3%, Mo 10,7%, Er 3,77 x 10^{12}/L, Hgb 103 g/L, MCV 85,9 fl, Hct 0,323 L/L, Tr 634 x 10^9/L, CRP 3,3 mg/L, fibrinogen 4,8 g/L, glukoza 4,9 mmol/L, kreatinin 77 µmol/L, ALT 91 UI/L, AST 78 UI/L.

U novembru su načinjeni kontrolni snimak pluća i laboratorijja, koji su ukazali na rezoluciju zapaljenskih procesa bez dalje progresije (Slika 4).

20 kg during the treatment). ECG: sinus rhythm, HR 89/min, PQ 200ms, negative T in D3, no changes in ST and T waves; BP 110/70 mmHg. Vesicular breathing on the left, and absent on the right. Heart rhythm is regular, but heart sounds are a bit quiet. No organomegaly, no edema of importance". Following lab results: ESR 34 mm/h, Le 7,5 x 10^9/L, Grn 62%, Ly 22,3%, Mo 10,7%, Er 3,77 x 10^{12}/L, Hgb 103 g/L, MCV 85,9 fl, Hct 0,323 L/L, Plt 634 x 10^9/L, CRP 3,3 mg/L, fibrinogen 4,8 g/L, glucose 4,9 mmol/L, creatinine 77 µmol/L, ALT 91 UI/L, AST 78 UI/L.

In November, control CXR and lab work were performed, and they showed the resolution of the inflammatory proces, without further progression (Figure 4).



Slika 4. Radiografija srca i pluća - novembar 2022. Jednostrano "tamno" plućno krilo desno. U plućnom parenhimu levo ne vide se akutne i aktivne patološke promene. Levi KFS transparentan.
Figure 4. *Chest X-ray – November 2022. Unilateral "dark" right lung. There are no active or acute pathological processes in the left lung.*

Godinu dana kasnije, u februaru 2023, nakon redovnog previjanja, lekar koji je primio bolesnika na dežurstvu obavio je razgovor sa bolesnikom: "Osećam se dobro sad, rana još pomalo curi, nekad ne curi uopšte. Ugojio sam se 15 kilograma, dobar mi je i apetit".

A year later, in February 2023, after his regular wound dressing, the on-call physician who examined the patient previously, asked him how he was: "I feel good now, the wound leaks a bit, and from time to time there is no leakage at all. I gained 15 kg and my appetite is good".

Diskusija

Nekrotizujuća pneumonija je teška komplikacija bakterijske pneumonije koju karakteriše upala plućnog parenhima sa konsolidacijama, perifernom nekrozom i multiplim mikrokavitacijama[8]. Lečenje podrazumeva sistemsku primenu antibiotika i identifikaciju uzročnika, ali je u slučaju izostanka odgovora na terapiju lekovima neophodna hirurška resekcija nekrotičnog plućnog tkiva[8]. U slučaju našeg bolesnika učinjena je pulmektomija desnog plućnog krila zbog *destroyed lung* sindroma. Kao uzrok naveo je tuberkulozni proces, što jeste najčešći uzrok koji dovodi do masovnog razaranja plućnog parenhima[1], ali je uvidom u medicinsku dokumentaciju, koju je bolesnik dostavio naknadno, utvrđeno da je uzrok razaranja nekrotizujuća pneumonija. Raniji specifični proces na plućima ili anatomske malformacije, koji su mogli biti osnova za ovakav nepovoljan razvoj bolesti, nisu opisani u dostupnoj nam medicinskoj dokumentaciji. Podatak o preležanoj tuberkulozi je upisan u elektronskom medicinskom dosijeu bolesnika i izveštajima pumologa, ali je dijagnoza zabeležena godinu i po nakon pulmektomije, i bez potvrde u otpusnim listama Klinike za grudnu hirurgiju.

Efuzija pleure i empijem pleure (EP) opisani su u teškim slučajevima Kovid-19 infekcije sa učestalošću od 9,55%[9]. Prisustvo pleuralnih izliva (EP) kod pacijenata u jedinicama intenzivne nege dovedeno je u korelaciju sa lošijim ishodima bolesti[9]. Slična negativna prognostička vrednost prisustva EP opisana je i kod nekih drugih pneumonija virusne etiologije[9]. U toku dve godine trajanja Kovid-19 pandemije u literaturi je opisano više slučajeva empijema pleure nakon potvrđene infekcije virusom SARS-CoV-2[10–16]. Samo u jednom od njih opisan je empijem kod pulmektomisane osobe, i završio se smrtnim ishodom (hemoragijski inzult u trećoj nedelji lečenja), ali je u pitanju bila Kovid-19 infekcija neposredno nakon pulmektomije zbog malignog procesa na plućima[17]. U slučaju našeg bolesnika u pitanju je bio empijem pleure nakon najverovatnije bakterijske upale pluća na koju se nadovezala potvrđena Kovid-19 infekcija, što je neuobičajen redosled. Zbog Kovid-19 pneumonije bolesnik je, pored antibiotika, primao i kortikosteroide sistemski (per os). Nakon kortikosteroidne terapije došlo je do pada nivoa C- reaktivnog proteina, ali se malaksalost održavala. Leukocitoza se javila mesec dana kasnije zajedno sa radiološki opisanom pleuralnom efuzijom, bez povišenog CRP. Moguće je da je imunosupresivna terapija doprinela razvoju oportunističke infekcije u pleuralnom kavumu[16], ali je teško dokumentovati takvu tvrdnju uzevši u obzir prethodnu istoriju bolesti. U februaru 2022. godine, u SAD, opisano je lečenje post-kovid empijema pleure kod 77-godišnjeg muškarca primljenog na lečenje sa subfebrilnošću, blagom tahikardijom (105/min), normalnom saturacijom i padom iste na napor, leukocitozom i pozitivnim prokalcitoninom, mesec dana nakon lečenja Kovid-19 infekcije. U izolatu nakon hirurškog lečenja izolovan

Discussion

Necrotizing pneumonia is a difficult complication of bacterial pneumonia characterized by the inflammation of pleural parenchyma with consolidations, peripherial necrosis, and multiple microcavities[8]. The treatment includes the systemic application of antibiotics and identification of the causative agent but if the therapeutic medical response fails, surgical resection of the necrotizing lung tissue is necessary.[8] In our patient`s case, pneumonectomy of the right lung was performed due to the *destroyed lung* syndrome. He named the TBC as the cause of the pulmectomy, which is the most frequent cause of massive destruction of the pulmonary tissue[1]. However, upon rewieving the medical records that he provided later, it was confirmed that the necrotic pneumonia was the cause of the lung destruction. Earlier specific lung processes or anatomical malformations, which might have been the bases for the unfavorable outcome of the disease, weren`t described in the available medical records. The data on previous tuberculosis infection and pulmonologist`s reports were entered in the patient`s EHRs, but the diagnosis was entered a year and a half after pneumonectomy, and also without confirmation from the discharge letter from the Thoracic Surgery Clinic.

Pleural effusion and pleural empyema were described in severe cases of COVID-19 infection, with an incidence of 9,55%[9]. The presence of pleural effusions in patients in the ICU (intensive care unit) correlates with worse disease outcomes[9]. The negative prognostic value of pleural effusion was similar in other types of viral pneumonia[9]. During two years of the COVID-19 pandemic, there were numerous cases of pleural empyema after confirmation of the SARS-CoV-2 infection described in the literature[10–16]. Only one case described pleural empyema in a patient who underwent the pulmectomy, which ended fatally (hemorrhagic stroke in the third week of treatment). COVID-19 infection appeared right after pneumonectomy, which was performed due to lung cancer[17]. In our case, pleural empyema probably occurred due to bacterial pneumonia, followed by the confirmed COVID-19 infection, which is an unusual order. Due to COVID-19 pneumonia, the patient received oral corticosteroids, besides antibiotics. After corticosteroid therapy, C- reactive protein levels decreased but malaise remained. Leukocytosis occurred a month later, together with radiological description of pleural effusion, without elevated CRP. It is possible the immunosuppressive therapy led to the development of the opportunistic infection in the pleural cavity[16] but it is difficult to document such assertion considering the prior disease history. The treatment of post-covid pleural empyema was described in 77 y/o male in the USA, in February 2022. He was admitted to a hospital due to subfebrile temperature, slight tachycardia (105 beats/min), normal saturation which dropped during activity, leukocytosis, and positive procalcitonin, a month after

je MRSA (meticilin rezistentni Staphylococcus aureus). Lečen je rezervnim antibioticima i hirurškom dekortikacijom levog plućnog krila[16]. U slučaju našeg bolesnika učinjena je drenaža gnojnog sadržaja sa aktivnom aspiracijom. U oba slučaja ishod je bio povoljan za obolelog.

U nama dostupnoj medicinskoj literaturi nismo naišli ni na jedan slučaj post-kovid empijema pleure opisan iz ugla izabranog lekara ili lekara sa primarnog nivoa zdravstvene zaštite. Takođe, nismo naišli na podatke o ishodima Kovid-19 infekcije kod ranije pulmektomisanih pacijenata. Iskustva poput ovog dragocena su da se naglasi mogućnost ili skrene pažnja na retke bolesti ili komplikacije bolesti koje inače ne viđamo i ne lečimo na primarnom nivou. Ne postoje smernice za zbrinjavanje ovakvih slučajeva na primarnom nivou zdravstvene zaštite, niti ovako kompleksne patologije treba lečiti u ordinacijama izabranih lekara[18]. Bez obzira na navedenu tvrdnju, lekari u primarnoj zdravstvenoj zaštiti (PZZ) treba da imaju u vidu da osobe sa akutnim, a retkim i teškim komplikacijama infekcija pluća, čije je lečenje dugotrajno i mukotrpno, imaju jako narušen kvalitet života, te da im je potrebna odgovarajuća i blagovremena potpora i saradnja na svim nivoima zdravstvene zaštite, naročito u periodima velikih kriza[19].

Zaključak

Prikazan je slučaj recidivirajućeg empijema pleure kod osobe pulmektomisane zbog nekrotizujuće upale pluća i *destroyed lung* sindroma, a komplikovanog Kovid-19 infekcijom. Cilj prikaza bio je da se skrene pažnja lekarima u opštoj medicini na bolesti ili komplikacije bolesti koje se retko viđaju i ne leče na primarnom nivou zdravstvene zaštite.

COVID-19 infection treatment. In the pleural liquid sample after the surgical treatment, MRSA (methicillin- resistant Staphylococcus aureus) was isolated. He was treated with reserve antibiotics and surgical decortication of the left lung[16]. In our case, the patient underwent drainage of the purulent mass with active aspiration. In both cases, the outcome was favorable for the patient.

We haven`t found a single case of post-covid pleural empyema described from the point of a GP or any physician from the primary healthcare level in the available literature. We also haven`t found any data on the outcomes of COVID-19 infection in patients with previous pneumonectomies. Experience, like this one, is valuable in order to emphasize the possibility or paying attention to rare diseases or disease complications which are otherwise rarely seen or treated in the primary healthcare setting. There are no guidelines for the treatment of such cases at the primary healthcare level, nor should such complex pathology be treated in GP offices[18]. This thought aside, physicians in primary healthcare should take into consideration that persons with acute, rare, and difficult complications of lung infections, whose treatment is long and tiresome, have very disrupted life quality, so therefore they need proper and timely support and cooperation on all levels of healthcare, especially during the big crisis[19].

Conclusion

We presented a case of recurrent pleural empyema in a patient with pneumonectomy due to necrotizing pneumonia and *destroyed lung* syndrome, complicated by COVID-19 infection. Our aim was to bring to general practitioners` attention diseases or disease complications that are rarely seen and not treated at the primary healthcare level.

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