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PRIKAZ SLUČAJA
CASE REPORT

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Uznapredovali generalizirani parodontitis kod pacijenta s aplastičnom anemijom: prikaz petogodišnjeg praćenja

Severe Generalized Periodontitis in a Patient with an Aplastic Anemia: a 5 Year Follow-up Case Report

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Sažetak
Aplastična anemija hematološka je bolest koju obilježava pancitopenija. U ovom prikazu slučaja opisana je mlada pacijentica s neliječenim parodontitisom povezanim s hematološkim bolestima i ciklosporinskom terapijom. Parodontna terapija provedena je u dva uzastopna dana, a sastojala se od nekirurške i antibiotske terapije uz dodatak antifibrinolitičke terapije. Obavljeni su mikrobiološki PCR testovi i testiranje parodontitis IL-1 polimorfizma. Nakon parodontne terapije upala se povukla te su izrađene mobilne parcijalne proteze. Nakon petogodišnjeg praćenja pacijentica je imala plitke dubine sondiranja unatoč izostanku suradnje tijekom faze održavanja. Aplastična anemija povećava rizik od pojave težih oblika parodontitisa koji dodatno mogu biti kompliciranci ciklosporinskom terapijom. Parodontna terapija kod ovakvih pacijenata mora biti dopunjena antibioticima.

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Ključne riječi
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Uvod

Bolesti crvenih krvnih stanica pojavljuju se u različitim oblicima, ali čini se da samo nekoliko njih utječe na parodontna tkiva. Uznapredovala destrukcija parodonta opisana je u slučaju pacijenata s aplastičnom anemijom, anemijom srpastih stanica, akatalazijom i pernicioznom anemijom (1). Aplastična anemija rijetka je hematološka bolest za koju je svojstvena hipocelularna koštana srž koja proizvodi nedovoljan broj hematopoetskih matičnih stanica, što rezultira deficijencijom staničnih komponenti kao što su eritrociti, trombociti i granulociti (2). Prema definiciji pancitopenije, najteže zahvaćeni pacijenti imaju razine neutrofila < 200/μL, trombocita < 20,000/μL i retikulocita < 60,000/μL (3). Zbog toga pacijenti s aplastičnom anemijom imaju povećan rizik od infekcije. To je i razlog zašto su bakterijska sepsa i gljivične infekcije najčešći uzrok smrti pacijenata s aplastičnom anemijom (2). Brennan i suradnici pratili su prevalenciju oralnih manifestacija kod 79 pacijenata s aplastičnom anemijom. Intraoralne petehije nađene su kod njih 27 posto, a hiperplazija i spontano krvarenje gingive kod 16 posto (4).

Introduction

Red blood-cell disorders have many different entities, but it seems that only few have an impact on periodontal tissues. Severe periodontal destruction has been reported in patients with aplastic anemia, sickle cell anemia, acatalasia and pernicious anemia (1). Aplastic anemia is a rare hematological disorder characterized by hypocellular bone marrow that produces insufficient number of hematopoietic stem cells, resulting in deficient cellular components such as erythrocytes, thrombocytes, and granulocytes (2). According to the definition of pancytopenia, the most severely affected patients present neutrophil counts of <200/μL, platelet counts of <20,000/μL, and reticulocyte counts of <60,000/μL (3). Because of this, a patient with aplastic anemia has a higher risk of infections. That is the reason why in patients with aplastic anemia the most common causes of death are bacterial sepsis and fungal infections (2). Brennan et al. evaluated the prevalence of oral manifestations in 79 patients with aplastic anemia. Intraoral patechiae were found in 27% of patients, spontaneous gingival bleeding and gingival hyperplasia were reported in 16% of the patients (4).

Svrha ovog prikaza slučaja jest opisati petogodišnje praćenje parodontne i protetske terapije kod pacijentice s aplastičnom anemijom koja je liječena ciklosporinom.

Prikaz slučaja

Dvadesetšestogodišnja pacijentica upućena je u Zavod za parodontologiju Stomatološkog fakulteta u Zagrebu zbog bolne i natečene gingive. Od svoje 16. godine uzima terapiju za aplastičnu anemiju (*Anemia aplastica gravis*) te je nekoliko puta bila hospitalizirana zbog remisije. Redovito se kontrolira na hematološkoj klinici te povremeno prima potpornu transfuzijsku terapiju. U akutnoj fazi anemije liječena je i kortikosteroidima. Unatrag deset godina uzima 100 mg ciklosporina (Ciklosporin, Alkaloid, Skoplje, Makedonija) na dan i dva puta tjedno jednu ampulu filgrastima (rekombinantni humani faktor stimulacije granulocitnih kolonija vezan na metionil, Neupogen, Roche-Pharma AG, Švicarska). No u navedenom razdoblju nije provedeno kompletno stomatološko i parodontno liječenje. Iako su njezini posljednji hematološki nalazi bili uredni (tablica 1.), odlučeno je da se parodontno liječenje učini uz potpornu antibiotsku terapiju.

Tijekom pregleda usne šupljine i parodonta uočena je izrazito loša oralna higijena – supra- i subgingivni kamenac te hiperplastična gingiva koja spontano krvari, posebice oko gornjih prednjih zuba (slika 1.). Oralnomedicinski nalaz ocijenjen je urednim. Dubine sondiranja oko svakog zuba bile su veće od 4 mm pa sve do 12 mm oko gornjih prednjih zuba koji su ujedno bili najkritičniji i izrazito mobilni (tablica 2.). Radiološkim pregledom uočene su cirkumferentne radiolucentne lezije oko nekoliko zuba, najviše u gornjoj fronti

The aim of this case report is to present a 5-year follow-up of periodontal and prosthodontic treatment in a cyclosporine treated aplastic anemia patient.

Case report

A 26-year-old female patient was referred to the Department of Periodontology, School of Dental Medicine, Zagreb due to a painful and swelling gingiva. She had been in therapy for aplastic anemia (*Anemia aplastica gravis*) from the age of 16, and was hospitalized on several occasions because of the disease remissions. She gets regular check-ups in a hematological clinic, with an occasional supportive transfusion therapy. In an acute phase of anemia she was treated with corticosteroids. She had been taking 100mg of cyclosporine (Ciklosporin, Alkaloid, Skopje, Macedonia) per day, and 1 ampulla of filgrastim (recombinant methionyl human granulocyte colony-stimulating factor, Neupogen, Roche-Pharma AG, Switzerland) twice a week, for 10 years. However, she lacked a comprehensive dental and periodontal treatment for that period of time. Although her last hematological findings revealed a well regulated blood cells count (Table 1), periodontal treatment was planned to be performed with an antibiotic supportive therapy.

Tablica 1. Hematološki status prije početka parodontne terapije.
Table 1 Hematological status prior to periodontal treatment.

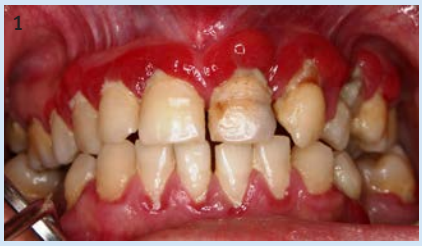
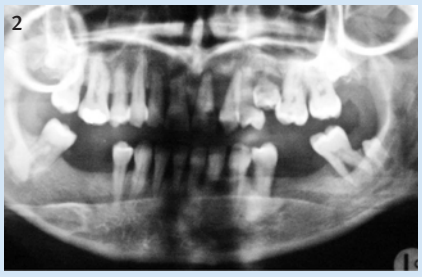
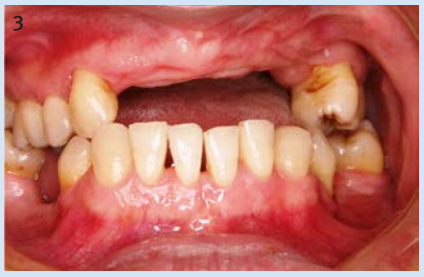
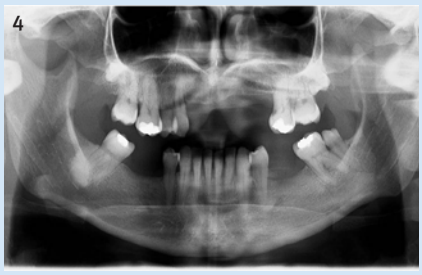
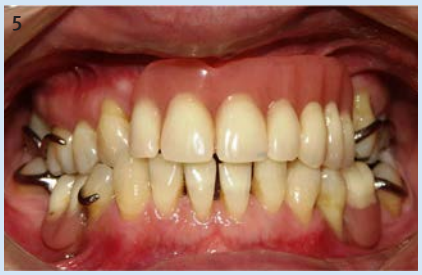
Parametar • Parameter	Izmjerene vrijednosti • Measured values	Normalan raspon • Normal range
Eritrociti • Erythrocytes	4.33	3.86 – 5.08 x10^{12}/L
Hemoglobin • Hemoglobin	141	119 - 157 g/L
MCV • MCV	98	83.0 – 97.2 fL
Trombociti • Thrombocytes	171	158 - 424 x10^{9}/L
Leukociti • Leucocytes	3,9	3.4 – 9.7 x10^{9}/L

MCV = Prosječni volumen eritrocita • Mean cell volume

During the oral and periodontal examination an exceptionally poor oral hygiene was found; there was a presence of supra- and subgingival calculus, and a hyperplastic gingiva, especially in the upper frontal teeth with spontaneous bleeding (Figure 1). Oral-medical findings were assessed as normal. Pocket probing depth on every tooth was greater than 4 mm, and up to 12 mm in the upper frontal teeth, which were

Tablica 2. Parodontni status prije i pet godina nakon parodontne terapije.
Table 2 Periodontal status before and 5 years after periodontal treatment.

	Početak • Baseline	Nakon 5 godina • After 5 years
Broj zuba • N teeth	21	17
Krvarenje pri sondiranju (%) • Bleeding on probing (%)	100	29.4
Indeks plaka (%) • Plaque index (%)	100	24.6
Udjel srednjih dubina sondiranja • Mean probing depth percentage		
<3 mm (%)	25.9	78.5
4-6 mm (%)	51.2	21.5
>7 mm (%)	22.8	0

Slika 1. Stanje gingive na prvom pregledu – uznapredovala hiperplazija gingive
Figure 1 Gingival appearance at the first visit - severe gingival hyperplasia.
Slika 2. Ortopantomogram na prvom pregledu – uznapredovali gubitak alveolarne kosti
Figure 2 Panoramic radiograph at first visit - severe alveolar bone loss.
Slika 3. Stanje gingive nakon ekstrakcija i parodontne terapije, prije protetske rehabilitacije
Figure 3 Gingival appereance after extractions and periodontal treatment, prior to prosthodontic rehabilitation.
Slika 4. Ortopantomogram pet godina nakon parodontne terapije; vidljiva je stabilna razina kosti te popunjavanje mezijalnog i distalnog koštanog defekta na zubu 34 te u području furkacijskog defekta na zubu 37
Figure 4 Panoramic radiograph 5 years after periodontal treatment. Note stable bone levels and resolution of the mesial and distal bony defects on tooth 34, and the furcation defect on tooth 37 and.
Slika 5. Stanje gingive i protetskoga nadomjestka pet godina nakon parodontne terapije
Figure 5 Gingival appereance and prosthodontic appliance 5 years after periodontal treatment.

(slika 2.). Nedostajao je i velik broj zuba (18, 15, 22, 25, 28, 38, 36, 35, 45, 46, 48) i protetski nadomjestak. Pacijentica je navela da su zubi spontano ispali tijekom hospitalizacija. Na temelju parodontološkoga i radiološkog nalaza dijagnosticiran je uznapredovali parodontitis povezan s hematološkim bolestima (aplastičnom anemijom) (5). Ciklosporinska terapija također je pridonijela parodontnom statusu. Pacijentica je potpisala suglasnost za standardno parodontno liječenje.

Komercijalnim testom polimerazne lančane reakcije (PCR) (MicroDent test, Hain Lifescience, Nehren, Njemačka) testirana je prisutnost pet parodontopatogenih bakterija: *Aggregatibacter actinomycetemcomitans*, *Prevotella intermedia, Porphyromonas gingivalis, Tannerella forsythia* i *Treponema denticola* (tablica 3.). Kako bi se utvrdila genetska predispozicija za parodontitis, učinjen je i test polimorfizma interleukina-1 (IL-1) (GenoType PST, Hain Lifescience, Nehren, Njemačka) za IL1A^{-889} i IL1B^{+3953}.

Izrazito pomični zubi s dubokim džepovima (12, 11, 21, 23, 24) ekstrahirani su zbog loše prognoze dan prije početak

considered the most critical and severely mobile teeth (Table 2). Radiological examination revealed circumscribed radiolucent lesions on several teeth, especially in the upper front (Figure 2). There were also a number of missing teeth (18, 15, 22, 25, 28, 38, 36, 35, 45, 46, 48), without any prosthodontic rehabilitation. The patient stated that the teeth spontaneously exfoliated during her hospitalization periods. On the basis of the periodontal and radiographic findings, a severe periodontitis associated with hematological disorders (aplastic anemia) was diagnosed (5). Cyclosporine therapy also contributed to the periodontal condition. The patient signed consent for the standard periodontal treatment.

A commercially available polymerase chain reaction (PCR) test (MicroDent test, Hain Lifescience, Nehren, Germany) was utilized for the detection of five periodontal pathogens: *Aggregatibacter actinomycetemcomitans*, *Prevotella intermedia, Porphyromonas gingivalis, Tannerella forsythia,* and *Treponema denticola* (Table 3). To ascertain if there was a genetic predisposition for periodontitis, a interleukin-1

Tablica 3. PCR analiza subgingivnih uzoraka.
Table 3 PCR analysis of subgingival samples.

Bakterije • Bacteria	Početak • Baseline	Nakon 5 godina • After 5 years
Aggregatibacter actinomycetemcomitans	Neg	Pos (+)
Prevotella intermedia	Pos (+)	Neg
Porphyromonas gingivalis	Pos (++)	Pos (+)
Tannerella forsythia	Pos (++)	Pos (+++)
Treponema denticola	Pos (+)	Pos (++)
(< 10^3 = neg, 10^3-10^4 = +, 10^4-10^5 = ++, 10^5-10^6= +++)		

ka inicijalne parodontne terapije. Nekirurška terapija provedena je u dva uzastopna dana po principu *full-mouth therapy* te je nadopunjena antibiotskom terapijom [amoksicilin 500 mg (Amoxicilin, Pliva, Zagreb, Hrvatska) i metronidazol 400 mg (Medazol, Belupo, Koprivnica, Hrvatska), 3 puta na dan, 8 dana] i antifibrinolitičkom terapijom [traneksamična kiselina 500 mg (Cyklokapron, Pfizer, Zagreb, Hrvatska) 4 puta na dan, 5 dana]. Antifibrinolitička i antibiotska terapija uvedene su dva dana prije ekstrakcija i nekirurške terapije. Pacijentica je do sljedećega kontrolnog pregleda dodatno ispirala usta dva puta dnevno po jednu minutu s 0,2-postotnom otopinom klorheksidina (Corsodyl® otopina, GlaxoSmithKline Consumer Healthcare, Zagreb, Hrvatska). Nakon tromjesečne reevaluacije (slika 3.) provedena je protetska rehabilitacija mobilnim djelomičnim protezama u gornjoj (12 – 25) i donjoj čeljusti (36, 45 – 46). Iako je pacijentica bila mlađe dobi, ovakva vrsta protetskoga nadomjestka primarno je izrađena zbog njezine loše financijske situacije zbog čega je bilo potrebno odbaciti fiksne protetske nadomjestke ili fiksne djelomične proteze na implantatima. Zbog uznapredovale parodontne bolesti i konstantne ciklosporinske terapije uključena je u program potporne parodontne terapije svaka dva mjeseca, ali suradnja je izostala.

Stanje parodontnih tkiva uvelike se poboljšalo nakon nekirurške parodontne terapije dopunjene antibioticima i antifibrinoliticima te je uspješno održavano tijekom pet godina (tablica 2.). Iako nije bilo potpune suradnje, pacijentica je imala plitke dubine sondiranja te radiološki nije bilo znakova daljnjega gubitka kosti (slika 4.). Analizom ortopantomograma može se uočiti dobitak kosti u području furkacije zuba 37, te u mezijalnome i distalnom aspektu zuba 34. Pacijentica je održavala prihvatljivu razinu oralne higijene te je bila zadovoljna protetskim rješenjem (slika 5.). Postojala je opasnost da će mobilne djelomične proteze potaknuti daljnje pogoršanje parodontnog stanja zuba nosača, ali na ovim zubima s plitkim dubinama sondiranja nije uočen daljnji gubitak parodontnog pričvrstka.

Ponovljeno mikrobiološko PCR testiranje nakon pet godina pokazalo je prisutnost putativnih parodontnih patogena *Aggregatibacter actinomycetemcomitans*, *Porphyromonas gingivalis, Tannerella forsythia* i *Treponema denticola* u velikim količinama (tablica 3.), unatoč antibiotskoj terapiji, te je zbog toga pacijentici prijetio gubitak parodontnog pričvrstka. Test rizika na parodontitis IL-1 polimorfizam bio je negativan jer je pronađen samo jedan pozitivan alel za IL1A^{-889} i IL1B^{+3953} (tablica 4.).

(IL-1) polymorphism risk test (GenoType PST, Hain Lifescience, Nehren, Germany) for IL1A^{-889} and IL1B^{+3953} was also done.

Severely mobile teeth with deep pockets (12, 11, 21, 23, 24) were assessed as having a poor prognosis, and were extracted the day prior to initial periodontal treatment. According to the concept of full-mouth periodontal therapy, a non-surgical treatment was performed in 2 consecutive days, and was supplemented with an antibiotic therapy (amoxicillin 500 mg (Amoxicilin, Pliva, Zagreb, Croatia) and metronidazole 400 mg (Medazol, Belupo, Koprivnica, Croatia), 3 times a day, for 8 days, and antifibrinolytic therapy (tranexamic acid 500 mg (Cyklokapron, Pfizer, Zagreb, Croatia) 4 times a day, for 5 days. The antifibrinolytic and antibiotic therapy started 2 days prior to extractions and non-surgical therapy. In addition, the patient was given instructions to rinse twice daily with a 0.2% chlorhexidine solution (Corsodyl® mouthrinse, GlaxoSmithKline Consumer Healthcare, Zagreb, Croatia) for 1 minute, until the next control appointment. Following the 3 month re-evaluation (Figure 3), prosthodontic rehabilitation was done with removable partial dentures in both the upper (12-25) and lower jaw (36, 45-46). Although the patient was young, due to her poor financial situation, this type of prosthodontic appliance was primarily fabricated and the fixed prosthodontic appliances or implant borne fixed partial dentures had to be dismissed. Because of the advanced periodontal disease and continuous cyclosporine therapy, the patient was placed on a periodontal supportive program every 2 months but she was not very compliant.

Following non-surgical periodontal treatment supplemented with antibiotics and antifibrinolytic regimen, the periodontal conditions greatly improved and were successfully maintained over a period of five years (Table 2). Although the patient was not entirely compliant, she maintained shallow pocket probing depths and radiographically there was no evidence of further bone loss (Figure 4). By evaluating the panoramic radiograph, it could be noted that there was bone gain in the furcation area of tooth 37, and on the mesial and distal aspects of tooth 34. The patient maintained acceptable oral hygiene and was satisfied with the prosthetic solution (Figure 5). There was a concern that the removable partial dentures were going to induce further deterioration of periodontal conditions on abutment teeth, but there was no further loss of periodontal attachment on these teeth exhibited by shallow pocket probing depths.

Repeated microbiological PCR test after 5 years still revealed the presence of putative periodontal pathogens: *Aggregatibacter actinomycetemcomitans*, *Porphyromonas gingivalis, Tannerella forsythia,* and *Treponema denticola* (Table 3) in high counts, in spite of the antibiotic regimen putting the patient at risk of further periodontal attachment loss. The periodontitis IL-1 polymorphism risk test showed negative results because of only one positive allele for IL1A^{-889} and IL1B^{+3953}, respectively (Table 4).

Tablica 4. Rezultati GenoType PST testa.
Table 4 Results of the GenoType PST test.

Il-1 A-889 Alel 1 • Allele 1	IL-1 A-889 Alel 2 • Allele 2	IL-1 B+3953 Alel 1 • Allele 1	IL-1 B+3953 Alel 2 • Allele 2
Pos	Neg	Pos	Neg

Rasprava

U posljednjih nekoliko desetljeća sve je više istraživanja koja dokazuju povezanost parodontne infekcije i sistemskih bolesti (6). Anemija je stanje smanjene koncentracije sustava za prijenos kisika u određenom volumenu krvi. Postoje naznake da bi smanjena koncentracija sustava za prijenos kisika koji je na raspolaganju tkivima mogao biti modificirajući čimbenik u imunosnom odgovoru parodontnih tkiva (7). Ciklosporin je prvi izbor u liječenju stečene aplastične anemije kod pacijenata kojima nije potrebna transfuzija. Istraživanja su pokazala da liječenje ciklosporinom rezultira održivom remisijom bolesti kod 40 posto pacijenata s aplastičnom anemijom (8). No ciklosporin je lijek koji može biti povezan s hiperplazijom gingive, što je isto tako dokumentirano za fenitoin i blokatore kalcijevih kanala. Navedene promjene obično počinju na labijalnim papilama i tijekom vremena susjedne papile imaju tendenciju *spajanja*, što je bilo prisutno i u našem slučaju. Hiperplazija gingive uvijek je ograničena pojasom pričvrsne gingive (9). Aimetti i suradnici proučavali su klinički učinak parodontne terapije kod pacijenata s transplantiranim bubrezima, jetrom ili srcem koji su uzimali ciklosporin A i imali izraženu hiperplaziju gingive. Uočeno je da nekirurška terapija značajno smanjuje sve kliničke parametre, uključujući i stupanj gingivne hiperplazije (10). Slično kao u navedenoj studiji, u našem je slučaju parodontna terapija uspješno smanjila upalu i eliminirala potrebu za kirurškom intervencijom. Kantarci i suradnici istaknuli su da gotovo 60 posto pacijenata s hiperplazijom gingive inducirane ciklosporinom ima fibroznu komponentu, ali su isto tako uspjeli izbjeći potrebu za kirurškim zahvatima kod 47 posto pacijenata (11). Nekoliko autora objavilo je radove koji opisuju odgovor pacijenata s aplastičnom anemijom na parodontnu terapiju. Oyaizu i suradnici opisali su parodontnu terapiju u slučaju teške aplastične anemije te istaknuli važnost odgovarajuće antibiotske profilakse i opreza zbog potencijalnog krvarenja. Važno je istaknuti da je rizik od sistemskih infekcija značajno povećan kod pacijenata s aplastičnom anemijom (12, 13). Tako je u našem slučaju subgingivna instrumentacija nadopunjena amoksicilinom i metronidazolom. Provedena je također parodontna terapija nakon suglasnosti hematologa koji je sugerirao uzimanje traneksamične kiseline tijekom pet dana. Nakon pet godina praćenja mikrobiološki status i dalje nije zadovoljavao, što se može povezati s neodgovarajućom suradnjom pacijentice u fazi potporne parodontne terapije. Neovisno o tome, parodontno stanje ostalo je stabilno, bez daljnjeg gubitka parodontne potpore i uz plitke dubine sondiranja.

Uzimajući u obzir dijagnozu parodontitisa i kako bi se utvrdila moguća nasljedna komponenta, pacijentica je upućena na testiranje polimorfizma IL-1 gena jer nepušači s IL-1 pozitivnim genotipom imaju 19 puta veći rizik za gubitak alveolarne kosti (14). No rezultati PST testa genotipa bili su negativni.

Zbog sve veće raširenosti dentalnih implantata odabrani protetski nadomjestak mogao bi se činiti kao zastarjelo rješenje. Poznato je i da pacijenti s mobilnim protezama imaju tendenciju daljnjeg gubitka parodontnih tkiva na zubima

Discussion

Over the past decades, a growing body of evidence documented a relationship between periodontal infection and systemic diseases (6). Anemia represents a condition with decreased concentration of oxygen-transporting system in a certain volume of blood. It has been suggested that lower concentration of oxygen available to the tissues could be a modifying factor in the periodontal immune response (7). Cyclosporine is the first choice in the treatment of acquired aplastic anemia in patients which do not need transfusion. Data showed that treatment with cyclosporine leads to the sustained disease remission in 40% of patients with aplastic anemia (8). However, cyclosporine is also the drug that can be associated with hyperplastic gingival overgrowth, which is also reported for phenytoin and calcium channel blockers. These alterations usually start on the labial papillae, and over time adjacent hyperplastic papillae tend to "merge", as recorded in this case. Gingival overgrowth is always limited to the zone of attached gingiva (9). Aimetti et al. evaluated the clinical efficacy of periodontal therapy in patients with transplanted kidneys, liver or heart, who took cyclosporine A and had severe gingival hyperplasia. They found that non-surgical periodontal treatment leads to significant reductions of all clinical parameters, including a degree of gingival overgrowth (10). Similarly to the mentioned study, in our case the causal periodontal treatment was successful in resolving the inflammation, thus eliminating the need for surgical intervention. Kantarci et al. found that almost 60% of patients with gingival hyperplasia induced by cyclosporine have a fibrotic component, but they also managed to avoid the need for surgical procedures in 47% of the patients (11). Several authors published papers describing the response of patients with aplastic anemia to periodontal therapy. Oyaizu et al. described periodontal therapy in severe aplastic anemia, and stressed the importance of appropriate antibiotic prophylaxis and precautions for potential bleeding. It is important to emphasize that the risk of systemic infection is significantly increased in patients with aplastic anemia (12, 13). In our case, subgingival instrumentation was supplemented with amoxicillin and metronidazole. Also, periodontal therapy was performed only after the approval of the hematologist, who suggested the administration of tranexamic acid for 5 days. At the 5 year follow-up, the microbiological status was still unsatisfactory, which can be attributed to inadequate patient compliance during the maintenance phase. Still, periodontal conditions remained stable with no further loss of periodontal support and shallow pocket probing depths.

Considering the periodontal diagnosis and in order to determine the possible hereditary component, the patient was referred to IL-1 gene polymorphism testing, since the IL-1 genotype positive non-smokers have a 19 times higher risk of alveolar bone loss (14). However, findings of genotype PST test were negative.

With the widespread use of dental implants the chosen prosthodontic treatment could be seen as somewhat out of date, and it is a well-known fact that patients with removable dentures tend to have further loss of periodontal sup-

nosačima (15). Iako je očito da bi nadomjestci na implantatima kod ovakvih pacijenata bili zanimljiviji, treba uzeti u obzir da je incidencija periimplantitisa kod pacijenata s parodontnom bolesti vrlo visoka (16) te da su ponovljena mikrobiološka testiranja u našem slučaju pokazala prisutnost velikih količina parodontnih patogena. Imajući na umu da velik broj implantata naseljavaju parodontni patogeni i *Staphylococcus aureus* (17), na taj bi se način samo povećao rizik od infekcije kod pacijenata s aplastičnom anemijom.

Zaključak

Na temelju nalaza u usnoj šupljini može se zaključiti da je aplastična anemija bolest s povećanim rizikom od pojave teških oblika parodontitisa koje dodatno može kompliciratи ciklosporinska terapija. Kod takvih pacijenata parodontna terapija mora početi što je prije moguće uz obveznu nadopunu antibioticima. Osim redovitih kontrolnih pregleda, važna je i bliska suradnja parodontologa i hematologa. Ovaj prikaz slučaja pokazuje da je tijekom petogodišnjeg razdoblja i kod pacijenata s tako teškom sistemskom bolesti moguće dobro regulirati parodontitis bez daljnjeg gubitka parodontnih tkiva.

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Autori negiraju bilo kakav sukob interesa.

port on abutment teeth (15). Although we realized that implant borne restorations in such a patient would be more interesting, the incidence of peri-implantitis in patients with periodontal disease is very high (16), and the repeated microbiological testing in our patient revealed a recurrence of a high count of periodontal pathogens. Bearing in mind that there is a high number of implants harboring periodontal pathogens and *Staphylococcus aureus* (17), this could pose an even greater threat of infection in patients with aplastic anemia.

Conclusion

On the basis of oral findings, it can be concluded that aplastic anemia is a disease with an increased risk of onset of severe forms of periodontitis, which can be additionally complicated by cyclosporine therapy. In such patients, periodontal therapy must start as soon as possible with mandatory antibiotic supplement. Apart from the regular recall appointments, a close collaboration between the periodontist and the hematologist is necessary. This case report shows that even in patients with such a severe systemic disease, over a period of 5 years, periodontitis can be well controlled without further periodontal support deterioration.

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Conflict of interest

The authors deny any conflicts of interest.

Abstract

Aplastic anemia is a hematological disorder characterized by pancytopenia. This case report presents a young patient with untreated periodontitis associated with hematological disorders, and cyclosporine therapy. During 2 consecutive days, periodontal therapy which consisted of non-surgical therapy supplemented with an antibiotic treatment and antifibrinolytic therapy was performed. Commercial microbiological PCR tests and periodontitis IL-1 polymorphism risk test were performed. Following the periodontal therapy, the inflammation was resolved and the patient's occlusion was restored by means of removable partial dentures. After the 5 year follow-up, the patient still remained with shallow probing depths although there was inadequate compliance during the maintenance phase. Aplastic anemia increases the risk of onset of severe forms of periodontitis that can be additionally complicated with cyclosporine therapy. In such patients, periodontal therapy must be supplemented with antibiotics.

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Key words
Anemia, Aplastic; Pancytopenia; Cyclosporine; Antifibrinolytic Agents; Gingival hyperplasia; Periodontitis

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