

ERUPTIVNA SEBACEALNA HIPERPLAZIJA KAO NUSPOJAVA ORALNOG TAKROLIMUSA KOD BOLESNIKA SA TRANSPLANTIRANIM BUBREGOM – PRIKAZ SLUČAJA

ERUPTIVE SEBACEOUS HYPERPLASIA AS A SIDE EFFECT OF ORAL TACROLIMUS IN A RENAL TRANSPLANT RECIPIENT – A CASE REPORT

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Sažetak

Uvod. Eruptivna sebacealna hiperplazija je benigno stanje lojnih žlezda koje se akutno razvija i često je povezano sa primenom imunosupresivne terapije. **Prikaz slučaja.** Pacijent starosti 56 godina javio se na pregled zbog brojnih asimptomatskih papula na licu, vratu i leđima. Zbog terminalne bubrežne insuficijencije, urađena je kadaverična transplantacija bubrega, nakon čega je uvedena imunosupresivna terapija: takrolimus u dozi od 3,5 mg/dnevno, sirolimus u dozi od 0,5 mg dva puta dnevno i prednizon u dozi od 20 mg/dnevno. Četiri meseca nakon započinjanja imunosupresivne terapije pojavile su se kutane promene. Dermoskopski i histopatološki nalaz potvrdili su dijagnozu eruptivne sebacealne hiperplazije. **Zaključak.** Naš prikaz ukazuje da eruptivna sebacealna hiperplazija može nastati u ranom posttransplantacionom periodu kod pacijenta nakon bubrežne transplantacije, a nakon primene takrolimusa.

Ključne reči: dermatoze lica; hiperplazija; lojne žlezde; papuloskvamozne dermatoze; takrolimus; transplantacija bubrega; imunosupresivna terapija

Abstract

Introduction. Eruptive sebaceous hyperplasia is a benign disorder of the sebaceous glands that develops acutely and is often associated with the use of immunosuppressive therapy. **Case report.** A 56-year-old patient presented with numerous asymptomatic papules on the face, neck, and back. Due to end-stage renal disease, a cadaveric kidney transplant was performed, followed by immunosuppressive therapy consisting of tacrolimus 3.5 mg/day, sirolimus 0.5 mg twice daily, and prednisone 20 mg/day. Cutaneous lesions developed four months after the initiation of immunosuppressive therapy. Dermoscopic and histopathological findings confirmed the diagnosis of eruptive sebaceous hyperplasia. **Conclusion.** This case indicates that eruptive sebaceous hyperplasia may occur in the early post-transplant period in patients after kidney transplantation, particularly following tacrolimus therapy.

Keywords: Facial Dermatoses; Hyperplasia; Sebaceous Glands; Skin Diseases, Papulosquamous; Tacrolimus; Kidney Transplantation; Immunosuppression Therapy

Uvod

Hiperplazija lojnih žlezda je benigno stanje u kojem dolazi do povećanja broja ćelija lojnih

Introduction

Sebaceous gland hyperplasia is a benign condition characterized by an increased

žlezda ili sebocita. Procenjuje se da sebacealna hiperplazija (SH) zahvata oko 1% opšte, zdrave populacije, sa izraženijom prevalencijom javljanja kod osoba muškog pola, srednjeg do starijeg uzrasta [1]. Učestalost javljanja raste kod pacijenata na hroničnoj imunosupresivnoj terapiji (10–16%) [1]. Podaci iz dve prospektivne kohortne studije, jedne sprovedene u Iranu gde je SH zabeležena kod 43,7% od 1.000 novorođenčadi i druge iz San Dijega, u kojoj je među 594 neonatusa utvrđena prevalencija od 42,6%, ukazuju da je ova promena česta u ranom neonatalnom periodu [1,2]. Ovakva učestalost odgovara činjenici da je SH kod novorođenčadi fiziološka i prolazna pojava nastala usled privremene stimulacije lojnih žlezda maternalnim hormonima [1]. Za razliku od klasične forme, eruptivna sebacealna hiperplazija (ESH) ima nagli tok sa pojavom multiplih lezija u kratkom vremenskom intervalu i neretko je povezana sa dugotrajnom primenom imunosupresivne terapije, najčešće ciklosporinom [3]. Lezije se obično nalaze u regijama bogatim sebacealnim žlezdama, najčešće lica, vrata i prednje strane grudnog koša u vidu žućkastih, solitarnih do multiplih papula. Najčešće je SH asimptomatska i pacijenti obično ne osećaju subjektivne tegobe osim eventualne estetske nelagodnosti. Iako benigno stanje, treba ga razlikovati od sebacealnog adenoma, sebacealnog nevusa, bradavica i bazocelularnog karcinoma. Za dijagnozu SH najčešće je dovoljan klinički pregled uz dermoskopiju, ali u slučajevima kada postoji preklapanje sa drugim dermatozama, potrebna je biopsija sa histopatološkom verifikacijom radi postavljanja definitivne dijagnoze.

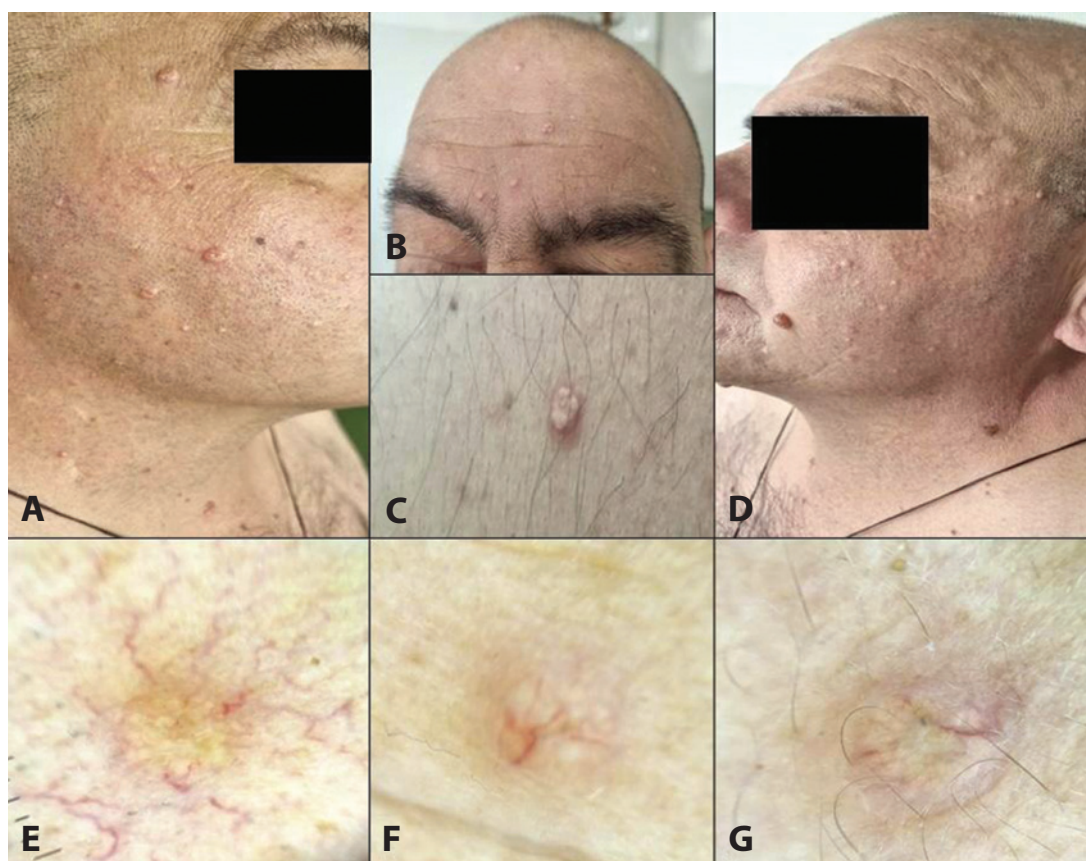
Prikaz slučaja

Pacijent, starosti 56 godina, javlja se na pregled u specijalističku ambulantu Klinike za dermatovenerologiju u Nišu zbog mnogobrojnih promena na koži lica i tela. Zbog terminalne bubrežne insuficijencije započeo je hronični program hemodijalize u februaru 2021. godine, a u oktobru 2024. godine urađena mu je kadaverična transplantacija bubrega. Nakon transplantacije potvrđena je odložena funkcija grafta, zbog čega je i dalje postojala potreba za lečenjem hemodijalizom. Od strane nefrologa, nakon transplantacije, propisana mu je imunosupresivna terapija: takrolimus u dozi od 3,5 mg/dnevno, sirolimus u dozi od 0,5 mg dva puta

number of sebaceous gland cells or sebocytes. It is estimated that sebaceous hyperplasia (SH) affects approximately 1% of the general healthy population, with a higher prevalence among middle-aged to elderly males [1]. The incidence increases in patients receiving chronic immunosuppressive therapy (10–16%) [1]. Data from two prospective cohort studies, one conducted in Iran, where SH was observed in 43.7% of 1,000 newborns, and another from San Diego reporting a prevalence of 42.6% among 594 neonates, indicate that this condition is common in the early neonatal period [1,2]. This high prevalence corresponds to the fact that SH in newborns is a physiological and transient phenomenon resulting from temporary stimulation of sebaceous glands by maternal hormones [1]. In contrast to the classic form, eruptive sebaceous hyperplasia (ESH) has an acute onset with the rapid appearance of multiple lesions over a short period of time and is often associated with long-term use of immunosuppressive drugs, most commonly cyclosporine [3]. Lesions are typically located in sebaceous gland-rich areas, most frequently on the face, neck, and anterior chest, presenting as yellowish, solitary to multiple papules. SH is usually asymptomatic, and patients typically do not experience subjective symptoms aside from possible cosmetic discomfort. Although benign, it should be differentiated from sebaceous adenoma, sebaceous nevus, warts and basal cell carcinoma. In most cases, clinical examination supplemented by dermoscopy is sufficient for the diagnosis of SH; however, in cases with overlap with other dermatoses, a biopsy with histopathological confirmation is required to establish a definitive diagnosis.

Case report

A 56-year-old male patient presented to the specialized outpatient clinic of the Dermatovenerology Clinic in Niš with multiple cutaneous lesions on the face and body. Due to end-stage renal disease, he was started on a chronic hemodialysis in February 2021, and in October 2024 he underwent a cadaveric kidney transplant. Post-transplant, delayed graft function was confirmed, requiring continued hemodialysis. Following transplantation, the patient was prescribed immunosup-



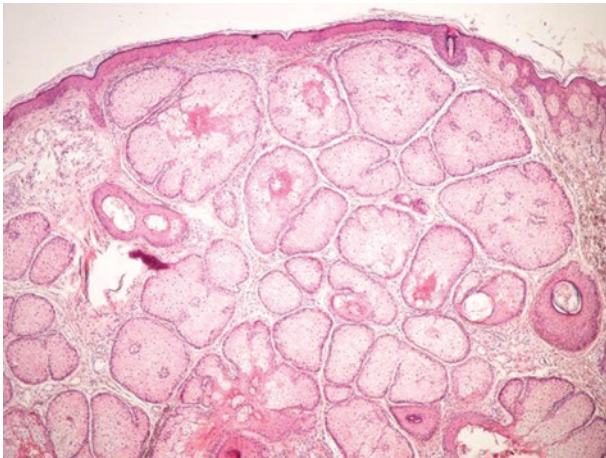
Slika 1. Klinička prezentacija SH. Brojne žućkaste papule na licu, vratu i leđima (A, B, C, D). Dermoskopijski pregled: periferni krvni sudovi sa centralno lokalizovanim žućkastim globulama (E, F, G)
Figure 1. Clinical presentation of SH. Numerous yellowish papules on the face, neck, and back (A, B, C, D). Dermoscopy showing peripheral blood vessels with centrally located yellowish globules (E, F, G)

dnevno i prednizon u dozi od 20 mg/dnevno. Laboratorijske analize nakon transplantacije pokazale su razvoj dijabetesa de novo, te je pacijentu uključena terapija insulinom. Četiri meseca nakon transplantacije i započinjanja imunosupresivne terapije, pacijent je primetio pojavu brojnih papula na licu, vratu i leđima, koje su bile asimptomatske (**Slika 1. A–D**). Dermoskopskim pregledom uočene su žućkaste globule u centralnom delu lezija sa perifernim krvnim sudovima (**Slika 1. E–G**).

Urađena je biopsija promena, koja je pokazala povećan broj sebacealnih lobulusa raspoređenih oko centralnog dilatiranog sebacealnog duktusa. Lobulusi sadrže zrele sebacealne ćelije bez atipije i uglavnom su udruženi sa folikulima dlake (**Slika 2**). Opisana mikromorfologija odgovara SH.

pressive therapy by a nephrologist, consisting of tacrolimus at a dose of 3.5 mg/day, sirolimus at a dose of 0.5 mg twice daily, and prednisone at a dose of 20 mg/day. Post-transplant laboratory analyses revealed the development of de novo diabetes mellitus, and the patient was started on insulin. Four months after the transplant and initiation immunosuppressive therapy, the patient noticed the appearance of numerous asymptomatic papules on the face, neck, and back (**Figure 1. A–D**). Dermoscopy revealed yellowish globules in the central portion of the lesions with peripheral vascular structures (**Figure 1. E–G**).

A biopsy of the lesions was performed and demonstrated an increased number of sebaceous lobules arranged around a centrally dilated sebaceous duct. The lobules



Slika 2. Histopatološka analiza koja pokazuje povećan broj sebacealnih lobulusa raspoređenih oko centralnog dilatiranog sebacealnog duktusa (H &E)

Figure 2. Histopathological analysis showing an increased number of sebaceous lobules arranged around a centrally dilated sebaceous duct (H&E)

Diskusija

Sebacealna hiperplazija je kompleksan poremećaj funkcije lojnih žlezda koji se razvija pod uticajem više faktora. Sa starenjem dolazi do pada koncentracije androgena, što usporava obnavljanje sebocita i dovodi do hiperplazije ćelija lojnih žlezda. Dodatni etiološki faktori uključuju hroničnu izloženost ultraljubičasto svetlosti (UV) i primenu imunosupresiva, naročito kod pacijenata nakon transplantacije organa. Iako se SH tipično javlja na koži izloženoj UV zračenju, opisani su i retki slučajevi lokalizacije na neizloženim područjima, uključujući vulvu i mukožu usne duplje [4,5]. U dostupnoj literaturi opisano je oko 13 slučajeva ESH; pacijenti su bili isključivo osobe muškog pola koji su najčešće imali hroničnu bubrežnu bolest ili su bili na imunosupresivnoj terapiji zbog transplantacije ili autoimunih bolesti creva (Kronova bolest) [3]. Takođe, nisu zabeleženi slučajevi ni u pedijatrijskoj populaciji [3]. Ovakav obrazac otvara pitanje potencijalne genetske predispozicije, same strukture pilosebacealne jedinice, pa čak i mogućnosti autozomno dominantnog tipa nasleđivanja. Ipak, ESH nije isključivo ograničena na muški pol. Pregledom literature došli smo do prikaza slučaja Kejtemela (Caytemel) i saradnika koji su dokumentovali slučaj pacijentkinje koja je nakon transplantacije bubrega i terapije ciklosporinom, razvila ESH, što potvrđuje da ovaj poremećaj nije pol-

consisted of mature sebaceous cells without atypical characteristics and were predominantly associated with hair follicles (**Figure 2**). The described micromorphology is consistent with SH.

Discussion

Sebaceous hyperplasia (SH) is a complex disorder of sebaceous gland function that develops under the influence of multiple factors. With aging, androgen levels decline, leading to a reduced sebocyte turnover and subsequent hyperplasia of sebaceous gland cells. Additional etiological factors include chronic exposure to ultraviolet (UV) radiation and the use of immunosuppressive agents, particularly in organ transplant recipients. Although SH typically occurs on UV-exposed skin, rare cases involving areas unexposed to the sun, including the vulva and oral mucosa, have also been reported [4,5]. Approximately 13 cases of eruptive sebaceous hyperplasia (ESH) have been described in the available literature; all reported patients were male and most commonly with chronic kidney disease or receiving immunosuppressive therapy for organ transplant or autoimmune inflammatory bowel disease (Crohn's disease) [3]. No cases have been reported in the pediatric population [3]. This pattern raises questions regarding a potential genetic predisposition, the specific structure of the pilosebaceous unit, and even the possibility of autosomal dominant inheritance. Nevertheless, ESH is not exclusively limited to the male sex. A literature review revealed a case reported by Caytemel et al., describing a female patient who developed ESH following kidney transplantation and cyclosporine therapy, demonstrating that this disorder is neither sex-specific nor limited to a particular immunosuppressive agent [6]. ESH has been observed in approximately 30% of kidney transplant recipients, most commonly as a consequence of cyclosporine therapy [7]. Cyclosporine can induce frequent hair follicle changes, including increased hair growth or hypertrichosis, which occurs in up to 60% of patients and is associated with the immunosuppressive effects of the drug [8]. In our patient, only cutaneous lesions were observed, while no hair follicle abnormalities were noted. Although the majority of ESH cases in

no specifičan niti ograničen na određeni imunosupresiv [6]. Kod približno 30% pacijenata nakon transplantacije bubrega primećena je ESH, pri čemu se najčešće javlja kao posledica primene ciklosporina [7]. Ciklosporin može izazvati česte promene folikula dlake, uključujući pojačanu maljavost ili hipertriozu, koja se javlja kod čak 60% pacijenata i povezana je sa imunosupresivnim dejstvom leka [8]. Kod našeg pacijenta primećene su isključivo kutane promene, dok promene u folikulu dlake nisu registrovane. Iako je većina slučajeva ESH kod pacijenata sa transplantiranim organom povezana sa ciklosporinom, postoje studije koje ukazuju da i takrolimus može biti etiološki faktor. Levandoski i saradnici [9] opisali su slučaj pacijenta kome je u dva navrata transplantiran bubreg, nakon čega je bio podvrgnut trostrukoj terapiji takrolimusom, mikofenolatom mofetilom i prednizonom. Nedugo nakon druge transplantacije bubrega razvio je ESH, pri čemu tokom terapije nije koristio ciklosporin. Studija sugerše da takrolimus samostalno može podstaćnuti proliferaciju sebacealnih žlezda, verovatno zbog mehanizma delovanja koji je sličan onom kod ciklosporina, dok mikofenolat i kortikosteroidi nemaju dokazanu ulogu u razvoju SH [9]. Moramo istaći da je podatak zasnovan na pojedinaćnom slućaju, a ne na seriji pacijenata. Stajnmec (Steinmetz) i saradnici [3] opisali su pojavu ESH kod pacijenta nakon druge transplantacije bubrega, tokom primene identićne trostruke imunosupresivne terapije, otprilike deset godina nakon uvođenja takrolimusa. Za razliku od prethodnog slućaja, ovaj pacijent je nakon prve transplantacije bio izložen ciklosporinu. Iako je u terapiji bio ciklosporin, autori smatraju da pojava ESH nije posledica kasne reakcije na ciklosporin, već da je glavni pokretać bio takrolimus [3]. Inhibitori kalcineurina, poput ciklosporina i takrolimusa, mogu doprineti pojavi ESH zahvaljujuć svojoj sposobnosti da se akumuliraju u pilosebacealnim jedinicama. Tome doprinosi afinitet prema lipidima i imunokompromitovanost transplatiranih pacijenata [10]. Ciklosporinom indukovana ESH obićno se javlja nakon više godina terapije [3]. Ovaj obrazac sugerše na postepeni kumulativni efekat leka na funkciju pilosebacealne jedinice. Literatura o takrolimusu je ogranićena, posebno jer se lek gotovo uvek primenjuje u kombinaciji sa drugim imunosupresivima, što otežava precizno odrećivanje vremena nastanka promena; naš slućaj, mećutim, dokumen-

transplant recipients are associated with cyclosporine, several studies suggest that tacrolimus may also represent an etiological factor. Levandoski et al. [9] reported a case of a patient who underwent two kidney transplants and subsequently received triple immunosuppressive therapy with tacrolimus, mycophenolate mofetil, and prednisone. Shortly after the second kidney transplant, the patient developed ESH, despite never having been treated with cyclosporine. The study suggests that tacrolimus alone may promote sebaceous gland proliferation, likely through a mechanism of action similar to that of cyclosporine, whereas mycophenolate mofetil and corticosteroids have no established role in the development of SH [9]. It should be emphasized that this observation is based on a single case rather than a patient series. Steinmetz et al. [3] described the occurrence of ESH in a patient after a second kidney transplant during treatment with the same triple immunosuppressive treatment, approximately ten years after the introduction of tacrolimus. Unlike the previously reported case, this patient had been exposed to cyclosporine after the first transplantation. Although cyclosporine was part of the therapeutic treatment, the authors concluded that ESH was not the result of a delayed reaction to cyclosporine but that tacrolimus was the primary triggering factor [3]. Calcineurin inhibitors, such as cyclosporine and tacrolimus, may contribute to the development of ESH due to their ability to accumulate within pilosebaceous units. This is facilitated by their lipid affinity and the immunocompromised state of transplant recipients [10]. Cyclosporine-induced ESH typically occurs after several years of therapy [3]. This pattern suggests a gradual cumulative effect of the drug on pilosebaceous unit function. The literature on tacrolimus is limited, particularly because the drug is almost always administered in combination with other immunosuppressive agents, making it difficult to precisely determine the timing of lesion onset; however, our case documents the occurrence of ESH as early as four months after initiating therapy. Although SH is far more commonly associated with cyclosporine use, a rare case of its development following kidney transplantation in a patient receiving immunosuppressive therapy with azathioprine and prednisone has

tuje pojavu ESH već četiri meseca nakon početka terapije. Iako se SH znatno češće dovodi u vezu sa primenom ciklosporina, u literaturi je opisan i redak slučaj njenog razvoja nakon transplantacije bubrega kod pacijenta koji je bio na imunosupresivnoj terapiji azatioprinom i prednizonom [11]. ESH kao neželjeni efekat sistemskih kortikosteroida izuzetno je retka. Do sada su u literaturi zabeleženi samo pojedinačni slučajevi. Većina publikacija u kojima se pominje prednizon odnosi se na kombinovane režime imunosupresije, pa je teško izdvojiti kortikosteroid kao jedini uzročnik. U jednom izveštaju, ESH se pojavila nakon hronične primene prednizona, dok su ciklosporin i azatioprin primenjivani kraće, što sugerise moguću ključnu ulogu prednizona u patogenezi ovog poremećaja [12]. U našem prikazu slučaja, prednizon je bio sastavni deo trostrukog multimodalnog terapijskog režima, te se njegova uloga u nastanku ESH ne može posmatrati izolovano od dejstva ostalih imunosupresiva. Terapija SH obuhvata različite modalitete; od standardnih pristupa, poput primene sistemskih retinoida i krioterapije, do savremenih metoda kao što su fotodinamička terapija i laserski tretmani, koji se mogu primenjivati samostalno ili u kombinaciji [13]. Terapijski plan treba prilagoditi svakom pacijentu pojedinačno, uz uvažavanje njegovih finansijskih mogućnosti i obima kožnih promena. U nedavnoj studiji prikazana je primena visokofrekventnog fokusiranog ultrazvuka (engl. high-intensity focused ultrasound, HIFU, 20 MHz) za terapijski tretman SH. U grupi od šest pacijenata sa ukupno 33 kutane lezije, primenjena je jednokratna HIFU procedura, što je dovelo do potpunog povlačenja približno 88% lezija, dok su preostale pokazale delimično kliničko poboljšanje [14]. Pacijenti su pokazali dobru toleranciju na tretman, uz minimalne neželjene efekte, što potvrđuje da HIFU predstavlja efikasan, neinvazivan i savremeni terapijski pristup u lečenju SH.

Zaključak

Naš slučaj ukazuje da eruptivna sebacealna hiperplazija može nastati u ranom posttransplantacionom periodu kod pacijenata nakon bubrežne transplantacije, a nakon primene kombinovane imunosupresivne terapije uključujući takrolimus, sirolimus i prednizon. Ovaj prikaz dodatno podržava pretpostavku o potencijalnoj ulozi imunosupresivnih lekova,

also been reported [11]. ESH as an adverse effect of systemic corticosteroids is exceedingly rare. So far, only isolated cases have been reported in the literature. Most publications mentioning prednisone involve combined immunosuppressive regimens, making it difficult to identify corticosteroids as the sole causative factor. In one report, ESH developed after long-term prednisone use, while cyclosporine and azathioprine were administered for shorter periods, suggesting a possible key role of prednisone in the pathogenesis of this disorder [12]. In our case, prednisone was part of a triple multimodal immunosuppressive treatment; therefore, its role in the development of ESH cannot be considered in isolation from the effects of other immunosuppressive agents. The treatment of SH includes various modalities, ranging from conventional approaches such as systemic retinoids and cryotherapy to modern methods including photodynamic therapy and laser treatments, which may be used alone or in combination [13]. The therapeutic plan should be individualized for each patient, considering financial considerations and the extent of skin involvement. A recent study reported the use of high-frequency focused ultrasound (eng., high-intensity focused ultrasound, HIFU, 20 MHz) for the treatment of SH. In a group of six patients with a total of 33 cutaneous lesions, a single HIFU session resulted in complete resolution of approximately 88% of lesions, while the remaining lesions showed partial clinical improvement [14]. The treatment was well tolerated, with minimal adverse effects, confirming HIFU as an effective, non-invasive, and contemporary therapeutic approach for SH.

Conclusion

Our case indicates eruptive sebaceous hyperplasia may develop in the early post-transplant period in kidney transplant recipients following combined immunosuppressive therapy including tacrolimus, sirolimus and prednisone. This case further supports the hypothesis that immunosuppressive agents, particularly calcineurin inhibitors, may play a role in the development of proliferative changes in sebaceous gland cells. Additionally, it demonstrates that eruptive sebaceous hyperplasia is not exclusively associated with cy-

naročito inhibitora kalcineurina u nastanku proliferativnih promena ćelija lojne žlezde. Takođe, pokazuje da eruptivna sebacealna hiperplazija nije isključivo povezana sa ciklosporinom, već se može javiti i kod terapije takrolimusom.

Skraćenice

SH – sebacealna hiperplazija
ESH – eruptivna sebacealna hiperplazija
UV – ultraljubičasta svetlost
HIFU – visokofrekventni fokusirani ultrazvuk

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cyclosporine but may also occur during tacrolimus therapy.

Abbreviations

SH – sebaceous hyperplasia
ESH – eruptive sebaceous hyperplasia
UV – ultraviolet radiation
HIFU – high-intensity focused ultrasound

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