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HRONIČNE DEKUBITALNE RANE KOD TRAUMATSKIH I NETRAUMATSKIH PACIJENATA U JEDINICAMA INTENZIVNOG LEČENJA

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SAŽETAK

Uvod/Cilj: Dugoležeći pacijenti u bolnicama, staračkim domovima, a naročito u jedinicama intenzivnog lečenja, izloženi su riziku od nastanka hroničnih rana. Termin „hronična rana“ se odnosi na rane koje ne zarastaju uprkos svim preduzetim merama lečenja u vremenskom trajanju od šest do osam nedelja. Cilj ove retrospektivne kohortne studije je bio da se za petogodišnji period analiziraju podaci o hroničnim dekubitalnim ranama koji su prikupljeni u jedinicama intenzivnog lečenja (JIL) Urgentnog centra Univerzitetskog Kliničkog Centra Srbija sa ciljem utvrđivanja faktora koji utiču na njihov nastanak i zarastanje.
Metode: Retrospektivna kohortna studija je izvedena u periodu od 01.01.2018. do 01.04.2023. godine u Urgentnom centru Univerzitetskog Kliničkog Centra Srbije i to u JIL politraumatskih, neurohirurških i hirurških pacijenata. Studija je obuhvatila 74 pacijenta sa dijagnozom hroničnih dekubitalnih rana. Za sve ispitanike podaci su dobijeni iz istorije bolesti i otpusne liste.
Rezultati: Tokom intrahospitalnog lečenja u JIL dekubitalne rane su evidentirane kod svih 74 pacijenata (56,8% žena i 43,2% muškaraca), a kombinovane hronične rane kod 57 (77,0%). Najveći broj ovih pacijenata je bio starijeg uzrasta (70 i više godina) (31,1%) i sa netraumatskim povredama (62%). Svi pacijenti su bili traheotomisani sa plasiranom gastrostomom. Lokalizacija dekubitalnih rana je najčešće bila na lumbosakralnoj regiji (44,6%), a zatim u trohanteričnoj regiji (23,0%). Među pacijentima najviše je bilo osoba sa hipertenzijom (90,5%), dijabetesom (79,7%) i hroničnom opstruktivnom bolešću pluća (82,4%), a do smrtnog ishoda je došlo kod 28 (37,8%) pacijenata. Neuhranjenost je bila prisutna kod 38 (51,4%), a prekomerna telesna težina i gojaznost kod 11 (14,9%) pacijenata.
Zaključak: Faktore rizika za nastanak dekubitusnih rana treba proceniti u trenutku prvog kontakta lekara sa nepokretnim pacijentom jer je to jedini preduslov za pravovremenu prevenciju. Poseban akcenat treba staviti na starije osobe, pothranjenje i osobe sa komorbiditetima.

Ključne reči: dekubit, intenzivna nega, hronične rane, faktori rizika

Uvod

Hronične rane predstavljaju veliki zdravstveni problem za pacijente, ali i za plastične hirurge i medicinske sestre i tehničare koji se sa njima susreću u svakodnevnom radu. Termin „hronična rana“ se odnosi na onu vrstu rane koja ne zarasta uprkos svim preduzetim merama lečenja u vremenskom periodu od 3 meseca ili je prošla kroz proces reparacije bez uspostavljanja održivog,

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CHRONIC PRESSURE ULCERS IN TRAUMA AND NON-TRAUMA PATIENTS IN THE INTENSIVE CARE UNIT

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SUMMARY

Introduction/Aim: Patients, who stay long in hospitals, nursing homes, and especially in intensive care units, are exposed to the risk of developing chronic wounds. The term "chronic wound" refers to wounds that do not heal despite all treatment measures taken in the period of six to eight weeks. The aim of this retrospective cohort study was to analyze data on chronic pressure ulcers that were collected in intensive care units (ICU) of the Urgent Care Center of the Clinical Center of Serbia during the five-year period, with the aim of determining the factors that influence their occurrence and healing.
Methods: The retrospective cohort study was conducted from January 1st, 2018 to April 1st, 2023 at the Urgent Care Center of the University Clinical Center of Serbia in the intensive care units in polytrauma, neurosurgical and surgical patients. The study included 74 patients diagnosed with chronic pressure ulcers. Data for all participants were obtained from medical history and list of discharge.
Results: During in-hospital treatment in ICU, pressure ulcers were found in all 74 patients (56.8% of women and 43.2% of men), while combined chronic wounds were found in 57 (77.0%) patients. The largest number of these patients were elderly (70 and older) (31.1%) and with non-traumatic injuries (62%). All patients were tracheotomized with a gastrostomy tube placed. The localization of pressure ulcers was most often in the lumbosacral region (44.6%), followed by the trochanteric region (23.0%). The majority of patients had hypertension (90.5%), diabetes (79.7%) and chronic obstructive pulmonary disease (82.4%), while 28 patients (37.8%) died. 38 patients were underweighted (51.4%), while 11 (14.9%) patients were overweight and obese.
Conclusion: Risk factors for the occurrence of pressure ulcers should be evaluated at the moment of the first contact of the doctor with the immobile patient because this is the only prerequisite for timely prevention. Special emphasis should be placed on the elderly, underweight and people with comorbidities.

Key words: pressure ulcers, intensive care, chronic wounds, risk factors

Introduction

Chronic wounds represent a major health problem for patients, but also for plastic surgeons and nurses and technicians who encounter them in their daily work. The term "chronic wound" refers to that type of wound that does not heal despite all the treatment measures taken for the period of three months or has gone through the process of reparation without establishing a sustainable, anatomic and functional result (1,2). Chronic wounds are sometimes defined as hard-

anatomskog i funkcionalnog rezultata“ (1,2). Neki definišu hronične rane kao rane koje teško zarastaju u periodu od 4 nedelje do više od 3 meseca (2-4).

Prema Društvu za zaceljivanje rana (engl. *Wound Healing Society* - WHS) hronične rane se prema etiologiji dele na dekubitalne, dijabetesne, venske i arterijske ulkuse (5). Hronične rane predstavljaju jednu vrstu tihe epidemije, jer se obično ne prepoznaju i posmatraju kao hronično komorbiditetno stanje. Procenjeno je da je 1 do 2% svetske populacije izloženo hroničnim ranama tokom svog života u zemljama u razvoju (6,7).

Uočeno je da postoji negativna korelacija zarastanja rana sa starenjem, prisustvom komorbiditeta, ograničenom pokretljivošću itd. (8,9). Komplikacije koje uključuju hronične rane su celulitis, infektivni venski ekcem, gangrena, hemoragije, kao i amputacije. Posledice hroničnih rana su brojne i mogu dovesti do nepokretnosti i određenog stepena invaliditeta, ali i smrnog ishoda (8,9).

Pacijenti koji su hospitalizovani u jedinicama intenzivnog lečenja (JIL) su skloni ka nastanku hroničnih rana zbog dugotrajne vezanosti za postelju, hemodinamske nestabilnosti, slabe perfuzije tkiva i oksigenacije, kao i skupa unutrašnjih i spoljašnjih faktora rizika (10-15). Takođe, studije su pokazale da su lica hospitalizovana u JIL i zavisna od mehaničke ventilacije obično starija i imaju veći rizik za nastanak hroničnih rana (10-15). Terapijski tretman hroničnih rana podrazumeva primenu antibiotika uz debridment koji je u skladu sa postupcima asepse i antisepse, negativnog pritiska, kao i obloga (17).

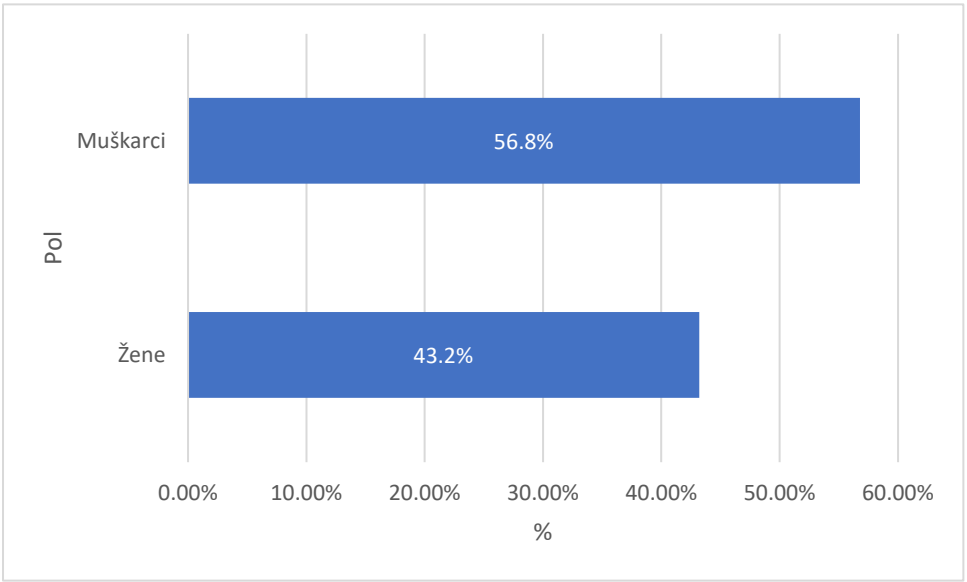
Cilj ove retrospektivne kohortne studije je bio da se za petogodišnji period analiziraju podaci o hroničnim dekubitalnim ranama koji su prikupljeni u jedinicama intenzivnog lečenja (JIL) Urgentnog centra Univerzitetskog Kliničkog Centra Srbija sa ciljem utvrđivanja faktora koji utiču na njihov nastanak i zarastanje.

Metode

Retrospektivna kohortna studija je izvedena u periodu od 01.01.2018. do 01.04.2023. godine u Urgentnom centru Univerzitetskog Kliničkog Centra Srbije i to u JIL politraumatskih, neurohirurških i hirurških pacijenata. Studija je obuhvatila 74 pacijenta sa dijagnozom hroničnih dekubitalnih rana. Za sve ispitanike podaci su dobijeni iz istorije bolesti i otpusne liste pacijenta. Podaci koji su analizirani u ovom radu su: demografske karakteristike (pol, uzrast), razlog hospitalizacije (traumatski/netraumatski), postojanje traheostome i gastrostome, dužina hospitalizacije, komorbiditeti, vrste hroničnih rana, lokalizacija dekubitalnih rana i smrtni ishod. U analizi podataka korišćeni su procena učestalosti i relativni brojevi, kao metode deskritpitvne statistike. Za pravljenje baze i obradu podataka korišćen je *Microsoft Excel 2010*.

Rezultati

Retrospektivna kohortna studija obuhvatila je 74 pacijenta sa dekubitalnim hroničnim ranama tokom vremenskog perioda od 01.01.2018. do 01.04.2023. godine, od kojih su 42 muškarca (56,8%) i 32 žene (43,2%) (Grafikon 1). Najmlađi



Grafikon 1. Distribucija pacijenta sa dekubitalnim hroničnim ranama u odnosu na pol (N=74)

to-heal wounds and that lasts from 4 weeks to more than 3 months (2-4).

According to the Wound Healing Society (WHS), chronic wounds are divided into decubitus, diabetic, venous and arterial ulcers according to their etiology (5). Chronic wounds represent a type of silent epidemic because they are usually not recognized and they are perceived as a chronic comorbid condition. It is estimated that 1 to 2% of the world's population is exposed to chronic wounds during their lifetime in developing countries (6,7).

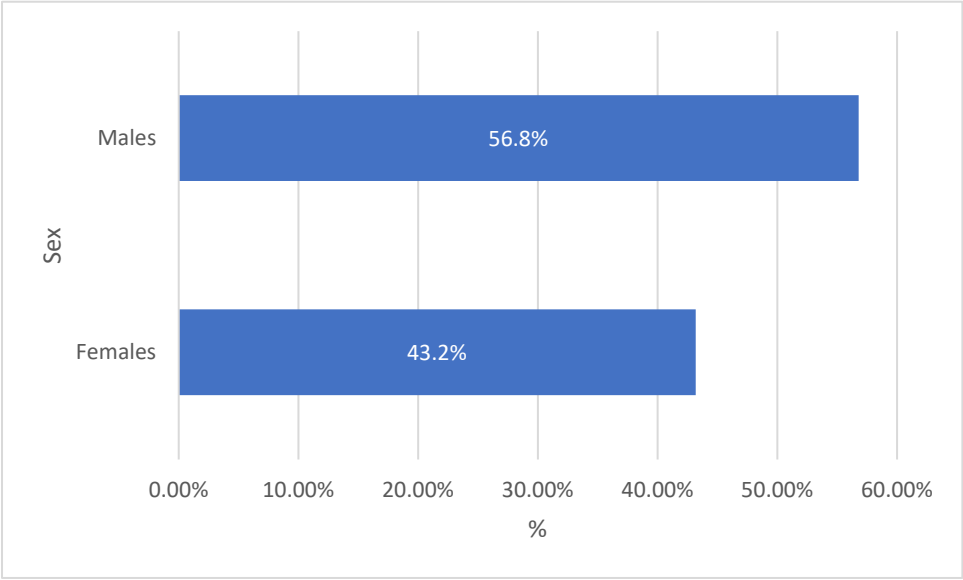
It has been noticed that there is a negative correlation between wound healing and aging, the presence of comorbidities, limited mobility (8,9). Complications that involve chronic wounds are cellulitis, infectious venous eczema, gangrene, hemorrhages, and amputations. The consequences of chronic wounds are numerous and they can lead to immobility and a certain degree of disability, as well as death (8,9).

The patients who are hospitalized in intensive care units (ICUs) are prone to the development of chronic wounds due to the prolonged bed rest, hemodynamic instability, poor tissue perfusion and oxygenation, as well as a set of intrinsic and extrinsic risk factors (10-15). Also, studies have shown that persons who are hospitalized in ICU and who are dependent on mechanical ventilation are usually older and have a greater risk of developing chronic wounds (10-15). The therapeutic treatment of chronic wounds includes the use of antibiotics with a debridement that is in accordance with the procedures of asepsis and antisepsis, negative pressure, as well as dressings (17).

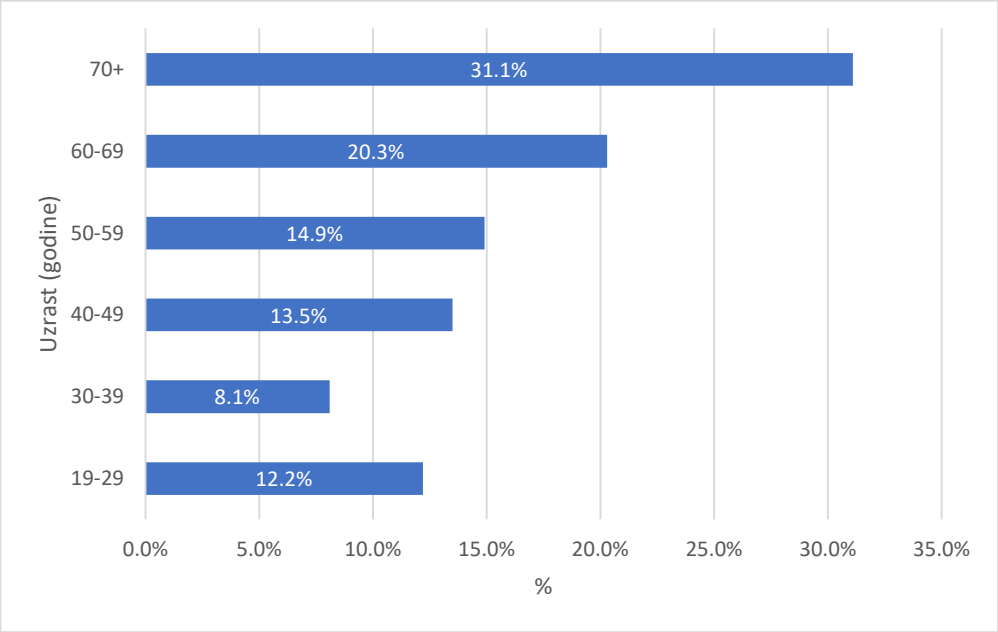
The aim of this retrospective cohort study was to analyze data on chronic pressure ulcers that were collected in intensive care units of the Urgent Care Center of the Clinical Center of Serbia during the five-year period, with the aim of establishing the factors that influence their occurrence and healing.

Methods

The retrospective cohort study was conducted from January 1st, 2018 to April 1st, 2023 at the Urgent Care Center of the University Clinical Center of Serbia, and it included polytrauma, neurosurgical and surgical patients in ICUs. The study included 74 patients diagnosed with chronic pressure ulcers. For all participants, data were obtained from the patients' medical history and list of discharge. Data that were analyzed in this study included the following: demographic characteristics (sex, age), reason of hospitalization (traumatic, non-traumatic), presence of tracheostoma and gastrostomy tube, length of hospitalization, comorbidities, type of chronic wound, localization of pressure ulcers and deathly outcome. The estimates of frequency and relative numbers were used in the analysis of data, as well as the methods of descriptive statistics. Microsoft Excel 2010 was used for the creation of database and analysis of data.



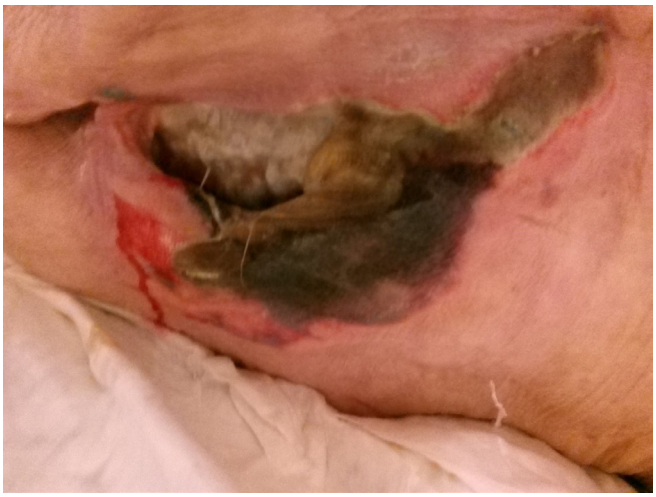
Graph 1. Distribution of patients with chronic pressure ulcers in relation to sex (N=74)



Grafikon 2. Distribucija pacijenta sa dekubitalnim hroničnim ranama u odnosu na uzrast (N=74)

pacijent imao je 19 godina, a najstariji 91 godinu, prosečna starost iznosila je 57,28 (±20,13) godina. Medijana uzrasta 60,5 godina. Najveći broj pacijenata je bio uzrasta 70 i više godina (31,1%) i 60-69 godina (20,3%) (Grafikon 2). Traumatskih pacijenata ukupno je bilo 28 (37,8%), a netraumatskih 46 (62,2%). Kombinovane hronične rane su zabeležene kod 57 (77,0%) pacijenata.

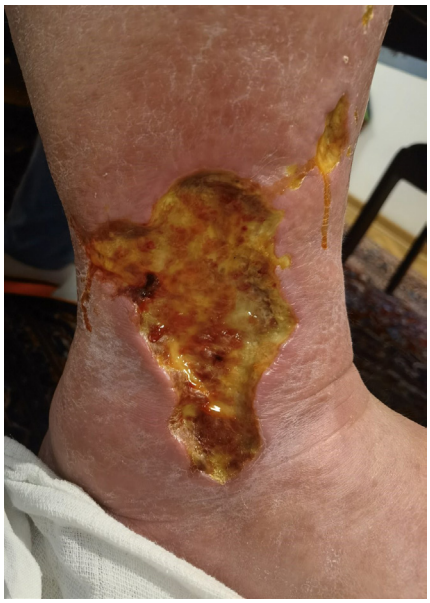
Lokalizacija dekubitalnih rana je najčešće bila na lumbosakralnoj regiji (33 tj. 44,6%) (Slika 1), a zatim u trohanteričnoj regiji 17 (23,0%), skapularnoj regiji 11 (14,9%), maleolusnoj regiji i na tabanima 7 (9,5%) (Slika 2), lakatnoj regiji 5 (6,8%) i parijetookcipitalnoj regiji 1 (1,4%).



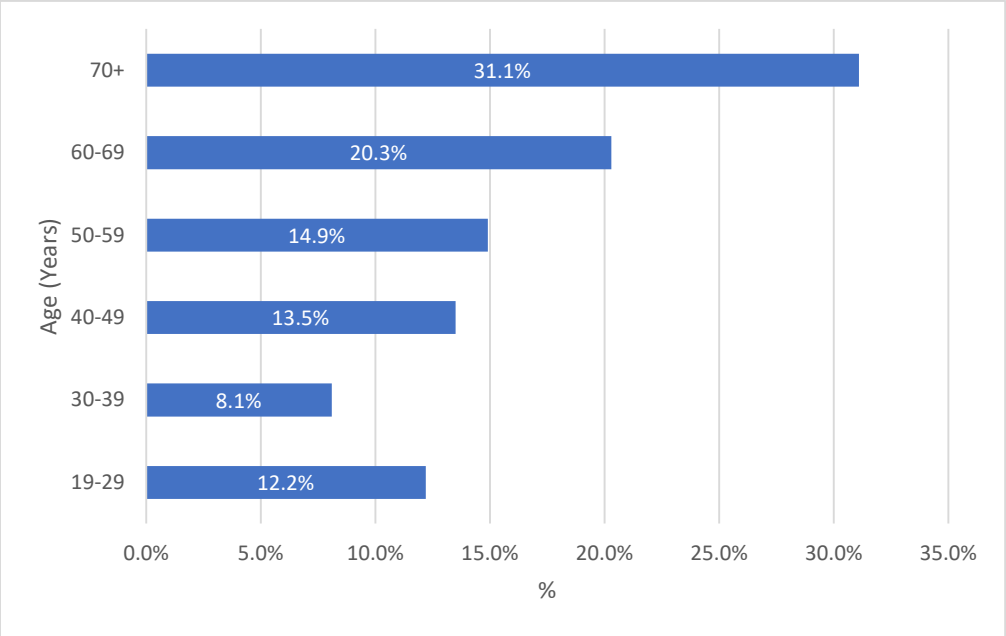
Slika 1. Prikaz sakralnog dekubita kod traumatskog pacijenta povređenog u saobraćajnom udesu sa pratećim subduralnim hematomom

Vremenski period intrahospitalnog lečenja trajao je najkraće 42 dana, a najduže 192 dana. Prosečno su pacijenti boravili u bolnici 71,18 (±27,59) dana. Medijana dužine boravka je 67 dana. Svi pacijenti su bili traheotomisani sa plasiranom gastrostomom.

Analiza komorbiditeta je pokazala da je 67 (90,5%) pacijenata imalo hipertenziju, 59 (79,7%) dijabetes, 38 (51,4%) reumatoidni artritis, 61 (82,4%) hroničnu opstruktivnu bolest pluća (HOBP), 35 (47,3%) demenciju, 5 (6,8%) virusni hepatitis C i 5 (6,8%) HIV.



Slika 2. Prikaz ulcerozne promene kod netraumatskog pacijenta sa dijabetesom, hroničnom opstruktivnom bolešću pluća i indeksom telesne mase 25-30kg/m^2



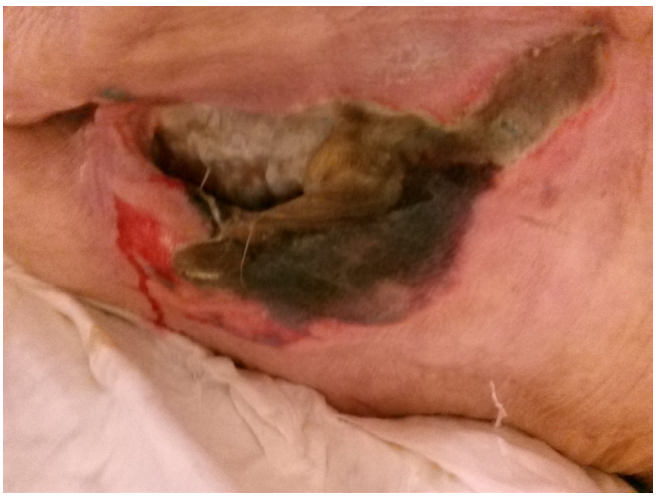
Graph 2. Distribution of patients with chronic pressure ulcers in relation to age (N=74)

Results

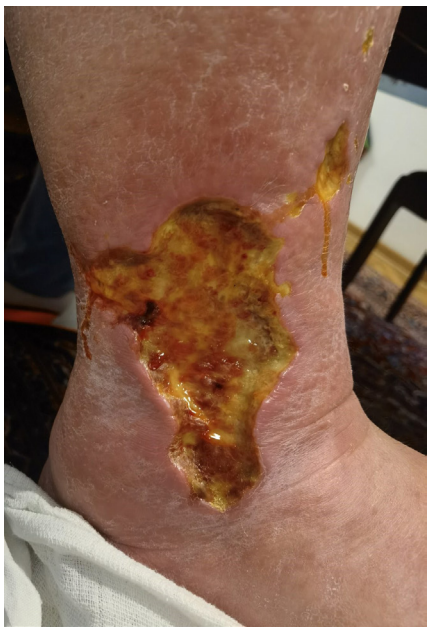
The retrospective cohort study included 74 patients with chronic pressure ulcers during the period January 1st, 2018 – April 1st, 2023, that is, 42 men (56.8%) and 32 women (43.2%) (Graph 1). The youngest patient was 19 years old, while the oldest was 91, and the average age was 57.29 years (+20.13). The age median was 60.5 years. The majority of patients were in the age group 70 and older (31.1%) and 60-69 years (20.3%) (Graph 2). There were 28 trauma patients (37.8%) and 46 non-traumatic patients (62.2%) (Graph 2). Combined chronic wounds were registered in 57 patients (77.0%).

The localization of pressure ulcers was most often in the lumbosacral region (33, that is, 44.6%) (Picture 1), and then in trochanteric region 17 (23.0%), scapular region 11 (14.9%), malleolar region and on the soles 7 (9.5%) (Picture 2), elbow region 5 (6.8%), and parieto-occipital region 1 (1.4%).

The shortest time period of in-hospital treatment was 42 days, while the longest was 192 days. On average, patients stayed in the hospital for 71.18 (+27.59) days. The median length of stay was 67 days. All patients were tracheotomized with a gastrostomy tube placed.



Picture 1. Prikaz sakralnog dekubita kod traumatskog pacijenta povređenog u saobraćajnom udesu sa pratećim subduralnim hematomom



Picture 2. Presentation of ulcerative change in non-trauma patient with diabetes, chronic obstructive lung disease and body mass index 25-30 kg/m^2

U našoj studiji od 74 ispitanika, 38 (51,4%) je bilo pothranjeno (BMI < 18,5 kg/m^2), 25 (33,8%) normalno uhranjeno (BMI - 18,5-24,9 kg/m^2), 10 (13,5%) prekomerno uhranjeno (BMI - 25-29,9 kg/m^2), a 1 (1,4%) gojazan (BMI ≥ 30 kg/m^2).

Došlo je do smrtnog ishoda kod 28 (37,8%) pacijenata.

Diskusija

Pacijenti gerijatrijske populacije sa komorbiditetima su pod visokim rizikom za razvoj dekubitusnih rana, kao i pacijenti sa paraplegijom, odnosno kvadriplegijom. Najefikasniji metod prevencije dekubitalnih rana kao i lečenje kada se pojave jeste izbegavanje povišenog pritiska tako što se vrši mobilnost pacijenta u vidu podsticanja kretanja. Istovremeno, faktore rizika koji promovišu razvoj dekubitalnih rana treba svesti na minimum. Kako bi se to postiglo potrebna je komunikacija među zdravstvenim radnicima; lekarima primarne zdravstvene zaštite, specijalistima, medicinskim sestrama i tehničarima kao i porodicama koje pružaju negu (18).

Šećerna bolest je veliki javnozdravstveni problem. Prema podacima Međunarodne dijabetičke federacije (engl. *International Diabetes Federation* - IDF) prevalencija šećerne bolesti među osobama uzrasta 20-79 godina je, 2010. godine, 6,6 % u svetu, a 8,5% u Europi. Do 2030. godine doći će u svetu do daljeg porasta broja ljudi sa šećernom bolešću tako da će njihov broj iznositi 284,6 miliona. Dvadeset puta veći rizik od amputacije donjih ekstremiteta imaju osobe sa šećernom bolešću. Na osnovu epidemioloških studija procena je da će oko 25% obolelih od dijabetesa melitusa tokom života razviti dijabetičko stopalo sa ulceracijom, a 5-15% će biti podvrgnuto amputaciji donjih ekstremiteta (19-21).

U našoj studiji dijabetes melitus je zabeležen kod 59 (79,7%) pacijenata, a amputacije nisu zabeležene.

U studiji *Jebakumar* i saradnika, prikazano je 813 pacijenata sa ruematoidnim artritisom (RA) tokom vremenskog perioda od 25 godina. Kod 125 pacijenata zabeležene su hronične rane, što je inicijalna dijagnoza RA duže trajala, to je bila veća verovatnoća da će se razviti ulcerozna promena: 5 godina nakon dijagnoze, 5% ispitanika je razvilo ulceroznu promenu, ali zaključno sa 25 godina, 26% ispitanika ga je razvilo (22).

U našoj studiji zabeleženo je 38 (51,4%) pacijenata sa RA u periodu od 5 godina. Verovatnoću za progresiju ulceroznih promena na duži vremenski period nismo ispratili.

Ukoliko pacijent nije u mogućnosti da se pokreće zbog imobilišućih medicinskih faktora, paralize, anestezije ili pak zbog fizičkih ograničenja, spoljašnji pritisak na prominentnim površinskim delovima tela premašuje kapilarni pritisak unutar tkiva, sa posledičnim prekidom cirkulacije, zatim nastupa hipoksija i oštećenje tkiva, a konačno i nekroza. Kritično trajanje ishemije sa posledičnim nastankom hronične rane zavisi od slučaja do slučaja; najčešće se raspon nalazi negde između 30 i 240 min. Studije kontrole slučaja pokazale su da pacijenti sa perifernom arterijskom okluzivnom bolešću imaju veći rizik ne samo od razvoja dekubitalnih ulkusa, već i od nepovoljnog toka s lošim zarastanjem rana (18).

Pretpostavlja se da takvi pacijenti imaju odgođeno vreme reperfuzije nakon uklanjanja spoljašnjeg pritiska. Ti su procesi najjači na delu gde koštane ili hrskavične izbočine poseduju samo tanki mekotkivni omotač (23).

Procesu nastanka hroničnih rana dodatan doprinos daje indeks telesne mase (engl. *Body Mass Index* - BMI). Prospektivna kohortna studija autora *Workum* i saradnika, prikazala je istraživanje korelacije između gojaznosti i nastanka hroničnih rana. Studija je sprovedena od maja 2013. do jula 2017. godine. Obuhvatila je 1911 pacijenata, gde je za analizu uzet uzorak od 1205 pacijenata. Od svih pacijenata, 851 (70,6%) je bio normalno uhranjen, a 354 (29,4%) je imalo BMI ≥ 30kg/m^2. Takođe je zabeleženo da je 40 pacijenata (3,3%) imalo BMI ≥ 40kg/m^2. Došlo se do zaključka da blaga do umerena gojaznost ne predstavlja nezavisan faktor rizika za razvoj dekubita u JIL. Morbidna gojaznost je međutim povezana sa ranijim razvojem hroničnih rana u JIL u komparaciji sa pacijentima koji nisu gojazni (24).

U našoj studiji od 74 ispitanika, 38 (51,4%) je bilo pothranjeno (BMI <18,5 kg/m^2), 25 (33,8%) normalno uhranjeno, a 11 (14,6%) prekomerno uhranjeno (BMI - 25-29,9 kg/m^2) ili gojazno (BMI ≥ 30 kg/m^2). Naši rezultati se slažu sa rezultatima drugih studija gde su pacijenti sa nižim BMI, odnosno pothranjeni, u većem riziku za nastanak hroničnih rana (25).

Pacijenti u našoj studiji lečeni su stadardnim protokolima lečenja hroničnih rana. Akcenat je

The analysis of comorbidities showed that 67 (90.5%) patients had hypertension, 59 (79.7%) diabetes, 38 (51.4%) rheumatoid arthritis, 61 (82.4%) chronic obstructive pulmonary disease (COPD), 35 (47.3%) dementia, 5 (6.8%) viral hepatitis C and 5 (6.8%) HIV.

In our study, of 74 participants, 38 (51.4%) were underweight (BMI <18.5 kg/m^2), 25 (33.8%) had normal weight (BMI – 18.5-24.9 kg/m^2), 10 (13.5%) were overweight (BMI – 25-29.9 kg/m^2), while 1 (1.4%) was obese (BMI > 30 kg/m^2).

Death occurred in 28 (37.8%) patients.

Discussion

Patients of the geriatric population with comorbidities are at a high risk of developing pressure ulcers, as well as patients with paraplegia or quadriplegia. The most effective method of preventing pressure ulcers, as well as treating them when they occur, is to avoid increased pressure by encouraging patient's mobility. At the same time, risk factors that promote the development of pressure ulcers should be minimized. In order to achieve this, communication between healthcare workers, primary care physicians, specialists, nurses and technicians, as well as families that provide care is needed.

Diabetes is a major public health problem. According to data from the International Diabetes Federation (IDF), the prevalence of diabetes among people aged 20-79 in 2010 was 6.6% in the world, and 8.5% in Europe. By 2030, there will be a further increase in the number of people with diabetes in world, so the number of people suffering from diabetes mellitus will be 284.6 million. People with diabetes have a twenty times higher risk of of amputation of lower limbs. Based on epidemiological studies, it is estimated that around 25% of patients suffering from diabetes mellitus will develop a diabetic foot with ulceration during their lifetime, and 5-15% will undergo lower limb amputation (19-21).

In our study, diabetes mellitus was registered in 59 (79.7%) patients, while amputations were not registered.

In the study of Jebakumar and associates, 813 patients with rheumatoid arthritis (RA) were presented during the 25-year time period. Chronic wounds were registered in 125 patients, and the longer the initial diagnosis of RA, the more likely it was to develop an ulcerative change: 5 years after the diagnosis, 5% of participants developed an ulcerative change, but at the end of 25 years, 26% of participants developed this change (22).

In our study, 38 (51.4%) patients with RA were registered during the 5-year period. The possibility for the progression of ulcerative changes for the longer period of time was not monitored.

If a patient is not able to move because of immobilizing medical factors, paralysis, anaesthesia or some physical limitations, the external pressure on prominent surface body parts exceeds the capillary pressure within the tissue, with the consequent interruption of circulation, then hypoxia and tissue damage occur, and finally necrosis. The critical duration of ischemia resulting in the formation of chronic wound varies from case to case; most frequently the range is somewhere between 30 and 240 minutes. Case control studies have shown that patients with peripheral occlusive arterial disease have a higher risk not only of developing pressure ulcers, but also of an unfavorable course with poor wound healing (18).

It is assumed that such patients have a delayed reperfusion time after external pressure is removed. These processes are the strongest in the parts where bony or cartilaginous protrusions have only a thin soft tissue covering (23).

Body mass index (BMI) makes an additional contribution to the process of the formation of chronic wounds. A prospective cohort study of Workum and associates, has presented the research of the correlation between obesity and the development of chronic wounds. The study was conducted from May 2013 to July 2017. It included 1911 patients, where a sample of 1205 patients was used for the analysis. Of all patients, 851 (70.6%) had normal weight, and 354 (29.4%) had BMI > 30 kg/m2. Also, 40 patients (3.3%) had BMI > 40 kg/m2. It was concluded that mild to moderate obesity does not represent an independent risk factor for the development of pressure ulcers in ICUs. However, morbid obesity is associated with earlier development of chronic wounds in the ICU compared to patients who are not obese (24).

In our study, which included 74 participants, 38 (51.4%) were underweight (BMI <18.5 kg/m^2), 25 (33.8%) had normal weight, while 11 (14.6%) were overweight (BMI – 25-29.9 kg/m^2) or obese (BMI >30 kg/m^2). Our results are in accordance with the

stavljen na previjanje pacijenata sa oblozima, debridman, zatim rotiranje pacijenata i primena antidekubitalnih madraca. Primena obloga doprinosi bržem zarastanju rane, većoj komformnosti pacijenta, ima veću apsorptivnu sposobnost (do 20 puta) i ekonomski isplativije je za duži vremenski period u odnosu na klasično previjanje gazom. Nedostatak u primeni gaze je njeno često urastanje u tkivo, a temperatura koja se može postići u rani je najviše do 24°C. Dobar materijal za previjanje treba da poseduje visoku mogućnost apsorpcije, da predstavlja barijeru mikroorganizmima, da dozvoljava evaporaciju kože, da ostavlja nedirnutu okolnu kožu uz mogućnost inspekcije rane, da bolesniku olakšava kretanje i redukuje potrebu čestog previjanja.

Zaključak

Neuhranjenost, hipoperfuzija i komorbiditeti koje ometaju pokretljivost treba prepoznati ako su prisutne i zatim lečiti, a prateće manifestacije, kao što je bol, treba lečiti simptomatski. Tokom daljeg toka lečenja pacijenta, izvodljivost, primenu i efikasnost mera za prevenciju ulkusa treba više puta ponovo procenjivati i dokumentovati, tako da se mogu izvršiti sve neophodne promene. Faktore rizika za nastanak dekubitusnih ulkusa treba proceniti u trenutku prvog kontakta lekara sa nepokretnim pacijentom, ili čim se stanje pacijenta pogorša; ovo je preduslov za pravovremenu prevenciju. Nakon procene rizika, terapijske mere treba preduzeti na osnovu individualnog profila rizika pacijenta, sa naglaskom na aktivnom podsticanju kretanja i pasivnom ublažavanju pritiska čestim promenama položaja.

Konflikt interesa

Autori su izjavili da nema konflikta interesa.

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results of other studies, where patients with lower BMI scores, that is, underweight patients, were at higher risk of developing chronic wounds (25).

The patients in our study were treated with the help of standard protocols for treating chronic wounds. The accent was placed on applying wound dressings, debridement, then rotating patients and using anti-decubitus mattresses. Application of wound dressings contributes to faster healing of the wound, greater patient comfort, has a higher absorptive capacity (up to 20 times) and it is more suitable in terms of their price for the longer period of time compared to classical gauze. The disadvantage of applying gauze is that it often grows into the tissue, and the temperature that can be reached in the wound is up to 24°C. A good dressing material should have high absorbency, be a barrier to microorganisms, allow the skin evaporation, then to leave the surrounding skin untouched with the possibility of inspecting the wound, make it easier for the patient to move and reduce the need for frequent changing of dressings.

Conclusion

Underweight, hypoperfusion and comorbidities that hinder the mobility should be recognized if present and then treated, while accompanying manifestations, such as pain, should be treated symptomatically. During the further course of treatment, the feasibility, application and effectiveness of measures for the prevention of ulcers should be repeatedly evaluated and documented, so that any necessary changes can be made. Risk factors for the occurrence of pressure ulcers should be assessed at the moment of the doctor's first contact with an immobile patient, or as soon as the patient's condition worsens, and this is the prerequisite for timely prevention. After the risk assessment, treatment measures should be taken based on the patient's individual risk profile, with an emphasis placed on active stimulation of movement and passive relief of pressure by frequent changes of position.

Competing interests

The authors declared no competing interests.

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