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Ugrizna rana lica

Facial Bite Wound

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Sažetak

Ugrizne rane jedne su od najčešćih ozljeda u ljudi. Najčešći su ugrizi pasa (više od 80%), mačaka i ljudi. U velikom postotku ugrizne rane locirane su na licu, osobito kod djece. Najčešće bakterije koje se mogu naći u ugriznoj rani su aerobi i anaerobi iz oralne flore napadača i aerobi s kože žrtve. Liječenje ugriznih rana lica je specifično u odnosu prema ostalim dijelovima tijela. Ugrizne rane lica primarno se šivaju, a zbog dobre prokrvljenosti komplikacije su rijetke, no ako se dogode mogu biti opasne za život. U radu je predstavljen slučaj infekcije ugrizne rane na licu uzrokovane konjskim ugrizom i liječenje komplikacija.

Zaprimljen: 18. studenog 2005.
Prihvaćen: 17. siječnja 2006.

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Ključne riječi

Ugrizna rana lica, ugriz konja.

Uvod

Ugrizne rane jedne su od najčešćih vrsta ozljeda u ljudi (1). Životinjski ugrizi uzrokuju 1% svih posjeta hitnoj službi, a za 1 do 2% takvih bolesnika potrebna je i hospitalizacija (2). Najčešće žrtve su mala djeca u dobi do 6 godina (52,8%) (3). Od ukupnog broja životinjskih ugriza 80 do 85% su ugrizi pasa, 10% mačaka, a 5 do 15% svih ostalih životinja – uključujući štakore, zečeve, konje, šišmiše i druge (2). Reakcija na ugriz može biti i alergijska. U literaturi je opisan slučaj anafilaktičke reakcije na ugriz konja (4). U urbanim područjima najčešći su ugrizi pasa, mačaka i ljudi (1). Budući da su u velikom postotku ugrizi pasa i ljudi locirani na licu, najčešće takve rane obrađuju oralni i maksilofacijalni kirurzi te određuju terapijski postupak. Ugrizi pasa na licu, vratu i glavi najčešći su u djece (73%), a kod odraslih je - od ukupnog broja psećih ugriza - samo 30% locirano u području glave i vrata (5).

Domaće životinje kao konji, krave i svinje grizu vrlo rijetko, no veličina i snaga njihova ugriza

Introduction

Bite wounds are one of the most frequent human traumas (1). Animal bites cause 1% of all emergency cases, and 1-2% of these patients require hospitalization (2). The most frequently affected are children aged up to 6 years (52.8%) (3). 80-85% of all bites are dog bites, 10% are cat bites and 5-15% are other animal bites, including rats, rabbits, horses, bats and other animals (2). An allergic reaction is a possible sequel of a bite. An anaphylactic reaction to a horse bite has been recently reported in the literature (4). In urban areas most frequent are dog, cat and human bites (1). Since great percentage of bites is located at the face, it is oral and maxillofacial surgeons that treat these wounds and determine treatment protocol. Bite wounds located at the face, neck and head are most frequent in children (73%), whereas only 30% of adult dog bite traumas are located at the head and the neck (5).

The incidence of domestic animals bites, such as horses, cows and pigs is low, but the severity and ex-

može rezultirati vrlo ozbiljnom, katkada i za život opasnom ozljedom. Konji ustima i zubima, kao jedinim oruđem, istražuju okolicu. Mladi konji pokazuju zube u igri i tijekom timarenja, a odrasli grizu i ugrizom se brane ako su uplašeni ili ih nešto boli (6).

Prikaz slučaja

Bolesnica u dobi od 32 godine javila se u hitnu službu zbog ugrizne rane na licu, koju je zadobila dok je timarila konja. U kliničkom statusu bila je vidljiva ugrizna rana perimandibularno desno oko 5 cm promjera, ravnih rubova, a zahvaćala je kožu i potkožje. Rana je primarno obrađena, isprana i sašivena po slojevima. Bolesnici je ordiniran antibiotik (Klavocin per os). Provedena je i antitetanusna zaštita te je poslana u antirabičnu ustanovu radi eventualne antirabične zaštite.

Nakon 24 sata bolesnica se ponovno javila u hitnu službu. Nije uzela antibiotik. Došla je zbog bolova u području desne strane vrata i febriliteta (38,9°C). U kliničkom statusu dominirala je zacrvenjena koža oko šavova i oteklina bolna na dodir te fenomen fluktuacije. Crvenilo kože protezalo se od perimandibularne regije desno do juguluma. Na palpaciju vrat je bio bolno osjetljiv. Skinuti su konci s rane te se dobilo puno gnojnog sadržaja. Bolesnica je primljena na bolničko liječenje. Obavljene su hitne laboratorijske pretrage ($L = 15,0 \times 10^9/L$, neutrofilija = 87% sa skretanjem ulijevo, C-reaktivni protein = 15,4 mg/l).

Obavljen je bris rane i hitan CT vrata. Nalaz CT-a pokazao je izraziti edem mekih česti u vratu desno te slobodni plin i tekući sadržaj (Slika 1.). U liječenje je uključena antibiotska intravenska terapija (Klavocin, Medazol, Garamycin). U općoj anesteziji obavljene su višestruke incizije na desnoj strani vrata. Nakon što je izvađen gnojni sadržaj, postavljene su široke lašvice (Slika 2.). Osim dosta tekućeg sadržaja, iz rane je dobiven i plin neugodnog mirisa. Istu večer konzultiran je infektolog zbog evaluacije antibiotske zaštite i veterinar kako bi provjerio antirabičnu zaštitu konja. Tijekom 24 sata nakon provedene kirurške i medikamentozne terapije, bolesnica je postala afebrilna. Iz brisa rane izolirane su *Pasteurella haemolytica*, *Pantoea species* i *Pasteurella pneumotropica*. Uz svakodnevno previjanje, deseti dan više nije bilo sekrecije na mjestima incizije te su lašvice izvađene. Tijekom hospitalizacije redovito su se pratile vrijednosti C-reaktivnog proteina i leukocita. Nakon normalizacije laboratorijskih nalaza bolesnica je dvanaesti dan nakon prij-

tent of these bites can cause very serious, even life threatening, traumas. Horses use their mouth and teeth as only instrument for exploring their surroundings. Young horses show teeth when playing and while they are groomed. Adult horses use biting as defense mechanism when frightened or in pain (6).

Case Report

A female patient aged 32 years appeared in the emergency unit of our Department seeking treatment for a facial wound that occurred while grooming a horse. Clinically she presented with a perimandibular bite wound, 5 centimeters in diameter, with straight edges, affecting dermis and subdermal area. The wound was primarily treated, rinsed and sutured in layers. An antibiotic for peroral use was administered (Klavocin). Antitetanic protection was performed and she was referred to the antirabic unit for possible antirabic protection.

After 24 hours the patient reappeared in the emergency unit. She did not take the antibiotic treatment, and complained about the pain in the right side of the neck and fever (38.9°C). Clinically, there was erythematous skin around sutures and painful edema with fluctuation. The redness of the skin stretched from the perimandibular area all the way to the jugulum. The neck was sensitive to palpation. The sutures were removed and massive purulent exudate was obtained. The patient was hospitalized, and emergency laboratory testing was performed ($L = 15,0 \times 10^9/L$, neutrophiles = 87% with a left curve, C-reactive protein = 15,4 mg/l).

A smear and emergency CT-scan of the neck were performed. CT-scan revealed a significant edema of the soft tissues of the neck with free gas and fluid (Fig. 1). Intravenous antibiotic treatment was introduced (Klavocin, Medazol, Garamycin). In total anesthesia multiple incisions were performed on the right side of the neck. After obtaining purulent exudate, wide drains were set up (Fig. 2). Along with fluid content, we obtained a malodorous gas from the wound. Specialist for infectious diseases was consulted the same evening in order to evaluate antibiotic therapy, as well as a veterinary surgeon because of the antirabic protection of the horse. Less than 24 hours after surgical treatment and antibiotic therapy initiation the fever receded. From the wound smear three microorganism cultures were isolated: *Pasteurella haemolytica*, *Pantoea species* and *Pasteurella pneumotropica*. With continuous daily wound care, after ten days there was no secretion on incisions and the drains were



Slika 1. CT vrata bolesnice kod prijma
Figure 1. CT-scan of the patient's neck on admission



Slika 2. Višestruke incizije na vratu
Figure 2. Multiple incisions on the neck

ma otpuštena na kućnu njegu. Na redovitoj kontroli u ambulanti bolesnici je predložana eventualna korekcija ožiljka (Slika 3.).

Rasprava

Najčešći uzročnici infekcija kod ugriznih rana su aerobna i anaerobna oralna flora napadača i aerobna flora kože žrtve (7-10). Bakterije koje se najčešće nalaze u rani su: *Pasteurella multocida*, *Streptococcus species*, *Staphylococcus species*, *Pseudomonas species*, *Capnocytophaga canimorsus*, *Staphylococcus aureus*, *Staphylococcus epidermidis* i anaerobi (11-13). Neke studije pokazuju da dvije trećine inficiranih rana



Slika 3. Nalaz na vratu nakon završetka liječenja
Figure 3. Neck situation after the end of the treatment

removed. During hospitalization there was frequent monitoring of C-reactive protein and leukocyte values. After the normalization of laboratory values the patient was discarded home on the 12th day. During routine control in the practice, an esthetic correction of the scar was suggested (Fig. 3).

Discussion

Most frequent causes of infections in bite wounds are aerobic and anaerobic microorganisms from the attacker's oral cavity and aerobic microorganisms of the victims skin (7-10). Microorganisms most frequently found in the wound are *Pasteurella multocida*, *Streptococcus species*, *Staphylococcus species*, *Pseudomonas species*, *Capnocytophaga canimorsus*, *Staphylococcus aureus*, *Staphylococcus epidermidis* and anaerobes

sadržavaju anaerobe (11). Uglavnom su to miješane infekcije aeroba i anaeroba. U jednoj od studija ističe se da su anaerobi i aerobi zajedno izolirani u 56% rana, samo aerobi u 36%, samo anaerobi u 1%, a u 7% inficiranih rana nisu izolirane bakterije (13, 14). Najčešće su infekcije uzrokovane bakterijom *Pasteurella multocida* i manifestiraju se tijekom 24 sata od ozljede. Kod mačjeg ugriza može se u rani naći i *Bartonella henselae*, uzročnik "bolesti mačjeg ogreba" (2).

Komplikacija ugriznih rana je infekcija. Mnogi čimbenici utječu na učestalost infekcije uključujući vrstu ugrizne rane, lokaciju ugriza i zdravstveno stanje pacijenta. Vrsta ugrizne rane ovisi o obliku čeljusti i veličini napadačevih zuba. Ozljede nakon psećeg ugriza uglavnom su jače razderotine i nagnječenja tkiva koja zbog snage ugriza mogu obuhvatiti kosti, mišiće, tetive, krvne žile i živce. Rane nastale mačjim ugrizom naizgled su male, ali zbog igličastog oblika mačjih zuba, ubodne su i duboke. Duboku i usku ranu teško je očistiti, pa se često bakterije mogu naći u samoj dubini rane. Imunokompromitirane osobe, posebice HIV-pozitivne, osobito su osjetljive na infekcije mačjim ugrizom (2). Iako u mačjim ustima ima manje bakterija nego u psećim, zbog vrste rane ugriz mačke se dvostruko češće inficira (30-50%) od psećega (15-20%) (15, 16).

Inficirana rana manifestira se tipičnim kliničkim znacima lokalne upale: bolom, lokalnim edemom, crvenilom i toplinom. Čest je i gnojni sadržaj te lokalni limfadenitis. Oko 10% pacijenata ima tjelesnu temperaturu iznad 38°C. Lokalne komplikacije mogu se proširiti u duboke strukture ili u krvotok te uzrokovati endocarditis, meningitis, apsces mozga, apsces pluća i sepsu s diseminiranom intravaskularnom koagulacijom, posebice kod imunokompromitiranih osoba (2). Te komplikacije mogu biti fatalne.

Zbog velike prokrvljenosti glave i vrata infekcija u tom području je rijetka - prema nekim studijama manja je od 6% (1). Usne, obrazi i nos su najčešće zahvaćeni dijelovi lica. Zbog dobre vaskularizacije glave i vrata liječenje ugriznih rana u tom području razlikuje se od ostalih dijelova tijela.

Prema preporukama iz literature, postupak obrade ugrizne rane na licu je sljedeći (1):

1. isprati ranu,
2. prije šivanja pažljivo pregledati dubinu rane, kako bi se ustanovila moguća ozljeda ličnog živca ili izvodnog kanala parotidne žlijezde,
3. kod jakih ugriza, osobito kod male djece, isključiti prijelom kosti,
4. obraditi rubove rane te sašiti ranu po slojevima,
5. antibiotska profilaksa (Tablica 1.),

(11-13). Some studies indicate that two thirds of infected wounds contain anaerobes (11), but mostly they are mixed infections. One of the studies has shown that anaerobes and aerobes have been isolated in 56% of the wounds, only aerobes in 36%, only anaerobes in 1% and no microorganisms in 7% of the wounds (13, 14). Infections with *Pasteurella multocida* are most frequent and can be observed during the first 24 hours after the injury. In cat bites it is possible to isolate *Bartonella henselae* that causes "Cat scratch disease" (2).

Infection is a complication of bite wounds. Many factors contribute to the incidence of infection, including the type of bite wound, location and health status of the patient. The type of the wound is dependent on the jaw form and size of the attacker's teeth. Injuries after dog bites are usually great lacerations and maceration of tissue that can, depending on the strength of the bite, include bones, muscles, ligaments, blood vessels and nerves. Cat bites usually present with small wounds, but due to the needle-like teeth, can be deep. Deep and narrow wound is difficult to clean and microorganisms can be found in the deeper parts of the wound. Immunocompromised persons, especially HIV positive subjects are highly susceptible to infections after cat bites (2). Although cat's mouth has less microorganisms than dog's, due to the bite type cat bites are twice as frequently infected (30-50%) in comparison with dog bites (15-20%) (15, 16).

An infected wound shows typical clinical signs of local infection: pain, local edema, redness and elevated temperature. Purulent content and local lymphadenitis are present often. 10% of patients has fever higher than 38°C. Local complications can spread to deeper structures, or can access the blood stream and cause endocarditis, meningitis, brain abscess, lung abscess and sepsis with disseminated intravascular coagulation, which is especially frequent in immunocompromised persons (2). These complications can be fatal.

The incidence of infections of the head and neck is rather low due to their richness in blood vessels; according to some studies it occurs in less than 6% (1). Most frequently affected parts of the face are lips, cheeks and nose. The vascularization of these parts of the body differentiates the treatment of wounds from the treatment of wounds in other parts of the body.

According to the literature guidelines, the procedure with a bite wound is as follows (1):

1. Rinse the wound
2. Prior to suturing carefully inspect the depth in order to establish a possible injury of the facial nerve or the parotid gland ductus
3. In severe bites, especially in children, exclude bone fractures

6. profilaksa tetanusa i

7. antirabična profilaksa pp

Ugrizne rane na licu primarno se šivaju, kako bi se prevenirao nastanak ružnih ožiljaka koji bi mogli narušiti izgled bolesnika. U profilaktičkoj primjeni antibiotika potrebno je voditi računa o tome da infekcije mogu biti uzrokovane oralnom patogenom florom napadača i bakterijama s površine kože ugrizene osobe. Osim odgovarajućih mjera prevencije infekcije, potrebno je poduzeti i zaštitu protiv tetanusa. Antirabična profilaksa ordinira se prema potrebi. Važno je identificirati životinju koja je nanijela ozljedu i njezina vlasnika te provjeriti je li životinja redovito cijepljena protiv bjesnoće. Ako se sumnja da je životinja bijesna, ugrizenu osobu treba cijepiti protiv bjesnoće. Serum i cjepivo protiv bjesnoće daju se i kada se ne može ustanoviti identitet vlasnika i životinje (17).

4. Refresh the edges and suture in layers

5. Antibiotic prophylaxis (Table 1)

6. Tetanus prophylaxis

7. Antirabies prophylaxis (if needed)

Bite wounds on the face are primarily sutured in order to prevent scars that can compromise the esthetics of a patient. In prophylactic antibiotic treatment one should take account of the fact that the infection can be used by the oral flora of the attackers as well as by the dermal flora of the victim. Together with adequate preventive measures one must include the protection against tetanus. Antirabic therapy is ordered if needed. It is important to identify the animal and its owner to check whether it has been vaccinated for rabies. If there is a doubt that an animal has rabies, the victim must be vaccinated. The serum and vaccine are given as well if it is impossible to confirm the animal or the owner (17).

Tablica 1. Antibiotički tretman ozljede lica (Prema Stefanopoulos i sur.(1))

Table 1. Antibiotic treatment of facial wounds (according to Stefanopoulos et al.(1))

	Pas • Dog	Mačka • Cat	Čovjek • Human
Patogena flora • Pathogenic microorganisms	Pasteurella spp. Staphylococcus aureus, aerobi • anaerobes Capnocytophaga	Pasteurella multocida (> 50%) Staphylococcus aureus anaerobi • anaerobes	Streptococci Staphylococcus aureus anaerobi • anaerobes
Profilaksa • Prophylaxis			
Primarna • Primary	Amoxicillin-clavulanate	Amoxicillin-clavulanate	Amoxicillin-clavulanate
*Alternativna/alergija na penicilin • *Alternative/allergy to penicillin	Clindamycin plus ciprofloxacin ^o ili • or trimethoprim-sulfamethoxazole Azithromycin	Cefuroxime axetil Clindamycin plus ciprofloxacin ^o ili • or trimethoprim-sulfamethoxazole Azithromycin	Clindamycin plus ciprofloxacin ^o ili • or trimethoprim-sulfamethoxazole Azithromycin Moxifloxacin ^o
Klinička infekcija • Clinical infection			
Pojava simptoma • Appearance of symptoms	12-48 h nakon ozljede • 12-48 h after trauma	7-18 h nakon ozljede • 7-18 h after trauma	12-36 h nakon ozljede • 12-36 h after trauma
Oralna terapija • Oral therapy	Amoxicillin-clavulanate ili • or *Clindamycin plus ciprofloxacin ^o ili • or trimethoprim-sulfamethoxazole ^{oo} Azithromycin	Amoxicillin-clavulanate ili • or *Clindamycin plus ciprofloxacin ^o ili • or trimethoprim-sulfamethoxazole ^{oo} Azithromycin	Amoxicillin-clavulanate ili • or *Clindamycin plus ciprofloxacin ^o ili • or trimethoprim-sulfamethoxazole ^{oo} Azithromycin
Parenteralna terapija • Parenteral therapy	Ampicillin-sulbactam ili • or ticarcillin-clavulanat ili • or cefoxitin ili • or *Clindamycin plus ciprofloxacin ili • or trimethoprim-sulfamethoxazole	Ampicillin-sulbactam ili • or ticarcillin-clavulanat ili • or cefoxitin ili • or *Clindamycin plus ciprofloxacin ili • or trimethoprim-sulfamethoxazole	Ampicillin-sulbactam ili • or ticarcillin-clavulanat ili • or cefoxitin ili • or *Clindamycin plus ciprofloxacin ili • or trimethoprim-sulfamethoxazole
Trajanje tretmana • Treatment duration			
Profilaksa • Prophylaxis	3-5 dana; 10-14 dana ako je zahvaćena kost • 3-5 days; 10-14 days if bone is affected	3-5 dana; 10-14 dana ako je zahvaćena kost • 3-5 days; 10-14 days if bone is affected	3-5 dana; 10-14 dana ako je zahvaćena kost • 3-5 days; 10-14 days if bone is affected
Liječenje • Treatment	7-14 dana za infekciju tkiva; 3 tjedna ili više za infekciju kosti • 7-14 days for tissue infection; 3 weeks or more for bone infection	7-14 dana za infekciju tkiva; 3 tjedna ili više za infekciju kosti • 7-14 days for tissue infection; 3 weeks or more for bone infection	7-14 dana za infekciju tkiva; 3 tjedna ili više za infekciju kosti • 7-14 days for tissue infection; 3 weeks or more for bone infection

^o fluorokinoloni nisu dopušteni djeci • fluorokinolones are not allowed for children, ^{oo}sulfonamidi se ne daju trudnicama i novorođenčadi • sulfonamides are not to be given to pregnant women or newborns

Zaključak

Ugrizne rane lica i vrata obrađuju se na specifičan način u odnosu prema ugriznim ranama na ostalim dijelovima tijela. One na licu primarno se šivaju. Zbog dobre prokrvljenosti infekcije i komplikacije su vrlo rijetke, no ako se jave, mogu vitalno ugroziti pacijenta. Indicirano je pratiti pacijenta do izlječenja, kako bi se u slučaju komplikacija moglo pravodobno kirurški i medikamentozno intervenirati.

Conclusion

Bite wounds of the face and the neck are treated in a specific manner when compared to other body parts. Bite wounds of the face are primarily sutures. Thanks to the good vascularity infections and complications are rare, but if they appear, they can be life threatening. The patient must be included in a follow-up until healed in order to ensure possible timely surgical and antibiotic intervention.

Abstract

Bite wounds are one of the most frequent human traumas. Most frequently it is the dog bites (more than 80%), cats, and humans. Great percentage of these traumas is located on the face, especially in children. Most frequently isolated bacteria in the wounds are aerobes and anaerobes from the oral flora of the attacker and aerobes from the victim's skin. The treatment of facial bite wounds has its characteristics when compared to other body parts, in that they are primarily sutured. Due to the excellent vascularity the complications are rare, but if they occur, they can be life threatening. This article reports an infection of a facial bite wound caused by horse bite and the treatment of subsequent complications.

Received: November 18, 2005

Accepted: January 17, 2006

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Key words

Bites and Stings; Wound Infection,
Bacterial Infections, Horses.

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