Case Report
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Soft tissue infections due to human bites

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Abstract
Background: Human bites are potentially dangerous wounds constituting an important cause of morbidity. Infections caused by human bites are reported to be more severe than infections caused by animal bites. The aim of this article is to present two patients with soft tissue infections secondary to human bites, which are rare in the literature.
Case presentation: The first patient is a 62-year old female whose 4th digit of her left hand was bitten by her disabled child and became necrotic. The second patient is a 35-year old female patient whose 2nd digit in her left hand was bitten by her husband five days ago. Both patients had undergone debridement for the necrotic infections in the area of the lesion and prescribed the appropriate antibiotherapy. Rest, elevation and immobilization were maintained. The reconstruction and physiotherapy gave satisfactory results.
Conclusion: Human bite wounds have long had a bad reputation for severe infection and frequent complication. For this reason, prophylactic antibiotic treatment should be given after human bite to prevent infection. If the infection signs and symptoms develop, rapid diagnosis, appropriate antibiotic and surgical therapy should be applied instantly.
Key words: Human bite, soft tissue infection, debridement

Introduction

Human bites are relatively rare; they are the injuries with the greatest risk (%10-50) for the development of infections (1). Infections secondary to human bite are reported to be more dangerous compared to animal bites (1-3). While the infection may be caused by the pathogens in the mouth flora of the biter, it may also be caused by the pathogens on the skin of the bitten person (4). The most common bacteria associated with infections secondary to human bites are α and β hemolytic streptococci, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Corynebacterium* spp. and *Eikenella corrodens*. These two patients with soft tissue infections secondary to human bites are presented in this article since they are interesting cases which are rarely presented in literature.

Case 1

The 62-year old female patient, whose 4th digit in her left hand was bitten by her disabled child 6 days ago, had initially presented to a healthcare center where her wound was dressed and oral antibiotherapy was prescribed. When her complaints escalated, the patient presented to our clinic. She was admitted to our clinic with the diagnosis of necrotic and infectious wound and soft tissue infection in the 4th digit in her left hand (Figure 1). Since she had a swelling and subcutaneous edema between the necrotic 4th finger towards the dorsal aspect of her hand as well as increased echogenicity in her soft tissues, she was started on a regimen with 4x1.5 grams of intravenous (IV) ampicillin-sulbactam. During the operation conducted by the department of orthopedics, the patient underwent a debridement and a bacterial culture samples were collected.

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The patient's left hand was placed in a short splint and elevated. No growth was observed in the wound culture. When the patient had a temperature on the third day of the antibiotherapy, blood cultures were obtained from both her arms and her medication as changed to 3x1 grams of IV meropenem. The patient's dressings were changed every day. The necrotic tissue on the 4th digit of the patient's left hand was debrided by the Plastic and Reconstructive Surgery department and the wound was dressed. When significant improvement was observed at the wound site (Figure 2) and the infection improved, the patient was discharged on the 12th day of the meropenem therapy with a prescription for oral levofloxacin treatment and a follow up visit by the Plastic and Reconstructive Surgery outpatient clinic scheduled a week later. She was also recommended physiotherapy for hand movements and a home exercise program by the Rehabilitation Department. No sign of local or deep infection was observed during the follow up visits on an outpatient basis.

Figure 1. Lesion formed after the bite.

Figure 2. Appearance after the treatment.

Case 2

A 35-year old female patient whose 2nd digit in her left hand was bitten by her husband five days ago presented to a healthcare center when she observed redness, increased temperature and swelling in the wound area. When her complaints became more severe in spite of the oral ciprofloxacin prescribed at this center, she presented to the emergency room of our hospital. After the debridement performed by the Plastic and Reconstructive Surgery department on the 2nd finger of her left hand, the patient was admitted to our clinic. A cell culture was performed and she was started on 3×4.5 g of IV empirical piperacillin-tazobactam. Her left upper limb was elevated. No growth was observed in the wound culture. The dressings were changed on a daily basis. The superficial tissue USG performed on the dorsal aspect of her left hand indicated an abscess, which was drained by the Orthopedics department through a one cm incision made on the focus of the abscess. When the patient's discharge diminished and her infection symptoms regressed on the 10th day of the treatment, the spectrum of the antibiotherapy was narrowed and the treatment was switched to 4x1.5 g of IV ampicillin-sulbactam. The necrotic tissue in the 3rd digit of the left hand was derided by the Plastic and Reconstructive Surgery department. On the 7th day of the ampicillin-sulbactam treatment, the patient was discharged with a prescription for 3x1 g of cefazol and recommended daily dressing changes. A follow up visit was scheduled by the Plastic and Reconstructive Surgery department for the following week in order to close the tissue defect in the 3rd digit of her left hand. Three weeks after her discharge, the patient was operated by the Plastic and Reconstructive Surgery department and the defect between the 3rd dorsal proximal phalanx and the distal phalanx of the left hand was repaired with the flap elevated from her left femoral region.

Discussion

Human bites are potentially dangerous wounds constituting an important cause of morbidity (5). Although injuries due to human bites are rarely observed, they carry the greatest risk (10-50%) for the development of infections (1). It is reported that infections that occur due to human bites are more dangerous than animal bites (1-3). Human saliva is

known to contain 108 microbes/ml and up to 50 different species of bacteria (6). This is the reason why the infection rates secondary to human bites are higher than other injuries (5). The most common bacteria blamed for the infections secondary to human bites are α and β haemolytic Streptococci, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Corynebacterium* spp. and *Eikenella corrodens* (1). No bacterial growth was observed in the cultures obtained from our patients and this may be explained with the antibiotherapy the patients received before presenting to us.

Human bites are most commonly observed in the hands and wrists. In a study conducted on 388 patients, more than 50.3% of the patients were bitten on their hands or fingers, 23.5% were bitten on an extremity, and 17.8% were bitten on their head or neck (7). Besides infection, human bites may also result in tendon ruptures and even amputations. The ratio of amputations is reported between 7% and 20% in the literature (8). Both our patients were bitten on their toes and treated with the appropriate antibiotics after rinsing and debridement. Our second patient had to be operated due to the tissue defect located between the 3rd dorsal proximal phalanx and the distal phalanx of her left hand and the defect was closed using the flap lifted from the left femoral region.

In patients at the early phase (the first 24 hours), those without concurrent diseases and without damage to the joint capsule or tendon injury, local wound care and treatment with oral broad-band antibiotics are reported to be adequate (3). In case of large or deep tissue injuries, systemic infection symptom or lack of response to the ambulant therapy, patients should be admitted to the hospital (9). Delays in hospitalizing the patient, performing the debridement or starting the IV antibiotherapy may worsen the treatment response (10,11). In these kinds of infections, rest, elevation and immobilization should primarily be maintained, the infected tissues should be debrided and closed sections should be drained. In addition, the appropriate antibiotic treatment should be started according to the clinical manifestation and the culture results. The physiotherapy should be scheduled at the earliest convenience depending on the infection and the patient should be followed up in terms of hand functions (9,10). In both the patients followed up at our clinic, IV antibiotic treatment was started at an early phase and debridements were performed before immobilization. The following reconstruction and physiotherapy led to satisfactory results.

Conclusion

Human bite wounds have long had a bad reputation for severe infection and frequent complication. For this reason, prophylactic antibiotic treatment should be given after human bite to prevent infection. If the infection signs and symptoms develop, rapid diagnosis, appropriate antibiotic and surgical therapy should be applied instantly.

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