Case Report

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A Rare Minor Trauma Causing Diabetic Hand Ulcer

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Abstract

A high prevalence of foot ulcers was confirmed among patients with diabetes, which are common indications for hospitalization, and usually associated with a long hospital stay with adverse outcomes including amputation and death. However, a diabetic hand is less recognized and is usually overlooked by clinicians. We see rare serials and case reports about a hand ulcer in diabetic patients. The aim of this case presentation is to explore clinical and treatment elements for a hand ulcer as well as a review of the literature.

Key words: *Hand ulcer, diabetes mellitus, micro-trauma, cross finger flap*

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Introduction

A diabetic hand has not been considered as a specific complication of diabetes. Some authors have suggested that it could be defined as a syndrome of musculoskeletal manifestations of the hand in diabetic patients. In literature, a hand ulcer was first reported in 1977 with infection. In African countries, a hand ulcer with infection was also termed the tropical diabetic hand syndrome [1-5].

A diminished skin barrier against bacterial pathogens in diabetes mellitus is prone to more invasive infections. Even the oral flora comprises apathogenic bacteria; for example, the risk of infection is high in human bites [6]. In this case, bacteria of oral flora are probably contaminated by a dental prosthesis.

Figure 1. The ulcer on the volar site of the index finger of the right hand.

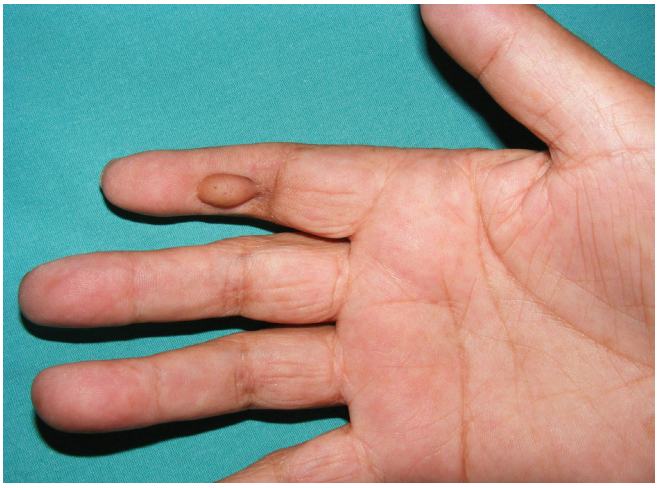

Figure 2. Successful healing on postoperative fifth month.

Case Report

A 64-year-old female patient was referred with an unhealing wound on the index finger of her right hand, which had been present for 15 days. Initially, her dental prosthesis was traumatically penetrating her index finger, causing abrasion and bleeding, which was then turned into an unhealing necrotic ulcer. Firstly, she noticed pain, swelling and discharge. The patient was then referred to the orthopaedic surgery department.

In a physical examination, an ulcer on the volar site of the index finger of the right hand and deep abscess formation under the ulcer were observed. The ulcer was measured 1 cm in diameter and was covered with necrotic tissue (Figure 1). Examination did not reveal a Dupuytren's contraction, flexor tenosynovitis or carpal tunnel syndrome in the hands of the patient.

Diabetes mellitus and arterial hypertension existed in the medical history of the patient with duration of 6 years. For these diseases, Sitagliptin 100 mg/ day, metformin 500 mg twice a day, perindopril 10 mg /day and nifedipine 30 mg/ day were prescribed.

In the initial treatment, her hand ulcer was debrided and drainage of the abscess was maintained. Antibiotic combinations of clindamycin 300 mg four times a day and ciprofloxacin 500 mg twice a day were prescribed. Neurological examination elucidated intention tremor and hyperalgesia in the bilateral hands. An electroneuromyographic test confirmed polineuropathy in the bilateral upper extremity. After 2 weeks of treatment, swelling of the finger and peripheral hyperemia existed. There was a skin defect with sizes of 2x1 cm in the volar surface of the middle phalanx of the index finger. Granulation tissue appeared in the wound. The patient was consulted by the department of plastic surgery. A flap application decision was made. During the operation, debridement of the wound was performed and a cross finger flap from the third finger was applied. Because the flexor tendon of the phalanx was exposed, the same antibiotic therapy was continued (clindamycin 300 mg four times and ciprofloxacin 500 mg twice a day). On the postoperative second day, while we were planning to discharge the patient, methicillin-resistant Staphylococcus epidermidis was isolated from the bacteriological culture of the purulent exudate under the flap. According to this result, the infection was managed by a semi-sentetic penicillin and beta-lactamase inhibitor combination (Piperacillin/tazobactam) with 4500 mg three times a day. During this period, flap viability had not been impaired. After seven days of piperacillin/tazobactam therapy, the wound was healed. Wound care was performed by dressings and three weeks after the operation, the cross finger flap was divided (Figure 2).

Discussion

The prognosis of the hand ulcer was poorer in patients who had diabetes for more than 3 years, compared to those who had diabetes for less than 3 years [1]. Today, we know that long duration of diabetes, poorly controlled blood glucose, micro-trauma and delayed treatment are the risk factors [1]. Diabetic peripheral neuropathy may play an important role in the pathogenesis [1,2,7]. Early control of blood glucose with insulin and early and effective anti-microbial therapy are crucial in addition to surgical debridement and drainage for the abscesses.

Compared to the diabetic foot ulcer, a diabetic hand ulcer is rare, less validated and less recognized. In two different studies, hand ulcers were reported with 8.3% and 3.75% among diabetic patients [3,4]. However, Dupuytren's contraction [4,7], flexor tenosynovitis [2], carpal tunnel syndrome [2,7,8], and trigger fingers [7,8] are commonly known complications of diabetic hand definitions [1,2,7]. Its association with infection can cause gangrene [8], amputation [7,9] or even death [10]. As many cases were reported from Africa, the term tropical diabetic hand syndrome was also used [5,11].

In a diabetic foot ulcer during a five-year period, investigation of hand ulcers revealed that 58.8% of the patients had concomitant infection associated with ulcers [1,2]. The mode of the presentation of hand lesions were dry gangrene, abscess, osteomyelitis and superficial ulcers [1,5]. Staphylococus aureus, streptococcus group D, colon bacillus, corynebacterium and fungus were the cultured isolates in that series. Causes of the ulcers were stab wounds, clipping nails, local eczema, chilblain and scald [1,2].

In our patient, an unusual, accidental trauma caused an infection that led to a hand ulcer. We did not examine the symptoms of diabetic hand syndrome (Dupuytren's contraction, flexor tenosynovitis or carpal tunnel syndrome). However, peripheral neuropathy was observed as a predisposing factor. However, choosing antibiotics without bacteriological culture unfortunately caused the spread of infection to the deep parts of the skin, and the clinical appearance was worsened. Staphylococcus epidermidis is one of the most reported species of staphylococci from oral samples [1,7,8]. Diminished skin defence against bacterial pathogens in diabetes mellitus is prone to the spreading of infection. We believe that diabetes mellitus and peripheral neuropathy as predisposing factors as well as the improper prescription of antibiotics led to the flap implantation in our case.

Conflict of interest statement

The authors do not declare any conflict of interest or financial support in this study.

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