

A Rare Cause of Diabetic Foot Ulcer: Polydactyly

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ABSTRACT Loss of sensation, loss of sweating and muscle atrophy, and deformity due to diabetic neuropathy are common risk factors for development of diabetic foot ulcer. However, polydactyly has been identified as a risk factor for diabetic foot ulcer only in one report. A 56 year old, female, with six toes on the left foot (duplication of fifth toe) was admitted with a purulent ulceration of 2x3 cm in size and 0.5 cm in depth on the middle of fifth metatarsal bone and abscess formation on the sixth toe. There was a 4x48 millimeter soft tissue abscess formation on the dorsal side of left foot with a wide fistula to the skin in magnetic resonance imaging. The pathophysiology of ulcer formation in a diabetic foot is complex and usually related with neuropathy and angiopathy. Polydactyly may represent an additional risk factor for diabetic foot ulcer development as well as other local risk factors such as increased pressure or change of pressure point due to deformation of foot, peripheral edema, callus formation and dry skin.

Keywords: Polydactyly; diabetic neuropathy; diabetic foot ulcer

The risk of developing a diabetic foot ulcer (DFU) in a lifetime is nearly 25% for diabetic patients.¹ DFU usually develops due to diabetic neuropathy (DNP). Loss of sensation in DNP makes patients vulnerable to trauma and loss of sweating due to autonomic neuropathy causes the dry skin.² Furthermore, muscle atrophy and deformity due to motor neuropathy is another important risk factor for DFU.² Polydactyly has been reported as a risk factor for DFU only in one report until now.

CASE REPORT

A 56 year old, female, with six toes on the left foot (duplication of fifth toe) and five toes on the right foot was admitted with ulceration of sixth toe. Informed consent was obtained from the patient. She declared that ulceration developed after she began to use a new shoe for a week. A purulent ulceration with 2x3 cm in size and 0.5 cm in depth and with a fistula on the middle of fifth metatarsal bone and abscess formation on the sixth toe were detected in physical examination (Figure 1). Results of laboratory examination were as follows: serum glucose level: 409 mg/dl (normal range: 70-100 mg/dl), A1c: 13.8% (normal range: 4.4-6.4%), erythrocyte sedimentation rate: 96 mm/hour (normal range < 20 mm/hour) and CRP: 20.6 mg/dl (normal range 0-0.5 mg/dl). The arterial and venous foot blood flows in Doppler ultrasonography were normal. There was a 4x48 millimeter soft tissue abscess formation on the dorsal side of left foot with a wide fistula to the skin



FIGURE 1: A purulent ulceration with 2x3 cm in size and 0.5 cm in depth with a fistula on the middle of fifth metatarsal bone and abscess formation on the sixth toe.

in magnetic resonance imaging (Figure 2). There were two separate joints of fifth metatarsal bone with proximal phalanges of fifth and sixth toes (Figure 3). Abscess was drained and empirical ampicillin-sulbactam (6 g/day) + ciprofloxacin (800 mg/day) was began intravenously. Additionally, insulin therapy for glucose regulation and daily wound care was applied. *Enterococcus faecalis* was identified in wound culture which was sensitive to available antibiotic treatment. At the end of 3 weeks treatment, the wound was greatly healed. Patient was referred for reconstructive surgery and recommended for suitable shoes.

DISCUSSION

The pathophysiology of ulcer formation in a diabetic foot is complex and usually related with neuropathy and angiopathy. On the other hand, there are several risk factors contributing DFU development. For example, metabolic disturbances such as hyperglycemia are leading systemic causes of ulcer formation.³ Additionally, several predisposing local risk factors such as increased pressure or change of

pressure point due to deformation of foot, peripheral edema, callus formation and dry skin have been reported for DFU.^{2,4} To the best of our knowledge, only Huang and Wang reported polydactyly as a predisposing local risk factor in developing of diabetic foot ulcer.⁵ We confirmed their report and we also suggested that polydactyly may represent an additional risk factor for DFU. Thus, foot examination is essential in diabetic care. If DFU developed, it should be treated with suitable wound care, antibiotic therapy and glucose regulation. Moreover, it is important to eliminate risk factors to prevent re-occurrence after healing of DFU.^{2,4} Therefore, preventive reconstructive surgery may be considered in these patients.

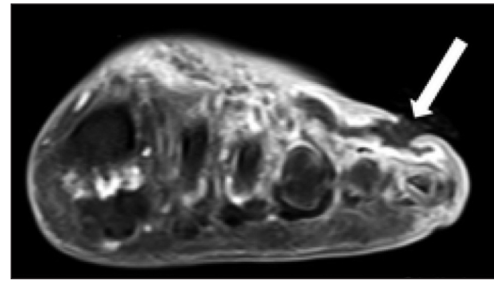


FIGURE 2: Post-contrast magnetic resonance imaging shows a 4x48 millimeter soft tissue abscess formation on the dorsal side of left foot with a wide fistula to the skin.

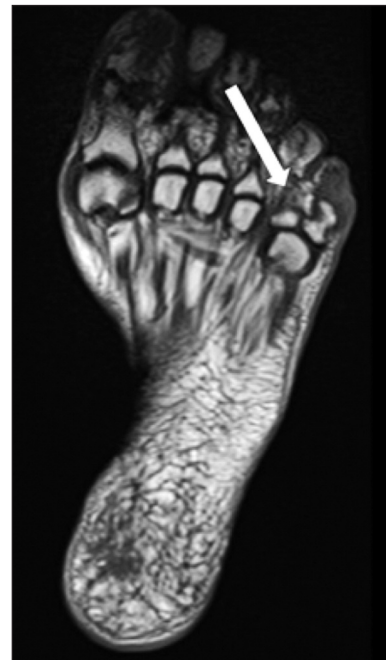


FIGURE 3: Magnetic resonance imaging shows two separate joints of fifth metatarsal bone with proximal phalanges of fifth and sixth toes.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or

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Authorship Contributions

Idea/Concept: Mehmet Ali Eren, Hatice İncebiyik; **Design:** Mehmet Ali Eren; **Control/Supervision:** Tevfik Sabuncu; **Data Collection and/or Processing:** Atilla Çiftçi, Hüseyin Karaaslan; **Analysis and/or Interpretation:** Mehmet Ali Eren; **Literature Review:** Hüseyin Karaaslan; **Writing the Article:** Mehmet Ali Eren; **Critical Review:** Tevfik Sabuncu.

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