

Case Report

Tropical diabetic hand syndrome- a case report with a short review

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ABSTRACT

Tropical diabetic hand syndrome (TDHS) encompasses an acute symptom complex found in patients of diabetes mellitus primarily in the tropical regions. The syndrome usually follows a minor trauma to the hand, may rapidly progress to gangrene, fulminant sepsis and may even be life threatening. The syndrome is less recognized and thus reported less often. The authors present here a case of Tropical diabetic hand syndrome (TDHS) in a middle aged female with a poor glycemic control. The patient was managed meticulously both by surgical debridement and proper, culture evidenced antibiotic therapy apart from routine diabetic management.

Keywords: Antibiotics, Debridement, Gangrene, Sepsis, TDHS

INTRODUCTION

Diabetic hand is a well-known entity in patients of diabetes mellitus reported in the literature and manifests as various clinical presentations including hand infections, dermatological manifestations, etc. One among such presentations is a typical symptom complex reported primarily from the tropical countries and the condition has been coined as Tropical diabetic hand syndrome (TDHS).

The syndrome usually follows a minor trauma and may proceed to gangrene and fulminant sepsis.¹⁻⁴ TDHS is poorly understood both by the patients as well as the clinicians. The condition may have severe consequences including permanent disability and even death without prompt and aggressive treatment.^{5,6}

There have been cases of TDHS reported from India as well.^{1,7,8} A middle aged poorly controlled diabetic female patient presenting as TDHS is reported here, the first case of its kind reported from the Kashmir valley.

CASE REPORT

A 48 year old postmenopausal female, known diabetic and hypertensive of 5 years duration, on an erratic medication and poor follow up, presented with development of a painful blister on the proximal digit of right little finger, 10 days prior to reporting to our hospital. The patient initially consulted a local healer, who advised some herbal ointment for application on the blister. There was some relief of pain, but the blister subsequently developed a colour change from pink to red and the affected finger got swollen.

The patient was later prescribed oral antibiotic (amoxicillin-clavulanic acid) with a local antibiotic ointment by a paramedic. However, the swelling extended to the whole of right hand and the affected area turned blackish. The patient did not recall any preceding history of trauma or insect bite. There was also exaggeration of her osmotic symptoms with the worsening of her local lesion.

On examination, the patient was obese, anemic and had skin tags on both sides of her neck. She was in agony because of the local pain. The local examination revealed swollen right hand with cellulitis and abscess formation of the right little finger with blackish discoloration and impending gangrene. Neurological examination revealed impaired position and vibration senses.



Figure 1: Involvement of little finger with subsequent debridement done.

There was loss of bilateral ankle reflexes with all other deep reflexes being sluggish. Fundus examination revealed features of severe non-proliferative diabetic retinopathy. Rest of the systemic clinical examination revealed no gross abnormality. On investigation, haemogram revealed normocytic normochromic anemia with hemoglobin of 10.2 g/dl. Total leukocyte count of 10.24×10^3 with 72% polymorphs. HbA1C was 9.9%. X-ray chest showed borderline cardiomegaly and ultrasound abdomen revealed grade one fatty liver. Blood sugar was 345 mg/dl at the time of admission. The other laboratory investigations, including Doppler ultrasound right upper limb, electrocardiogram, arterial blood gas analysis, rest of the biochemical and other necessary investigations revealed no abnormality.



Figure 2: Noninvolvement of the underlying bone.

The patient underwent incision and drainage of the abscess and proper wound debridement of the affected finger (Figure 1, Figure 2). The pus culture revealed

methicillin resistant *Staphylococcus aureus* sensitive to linezolid and amikacin. The patient was put on the recommended antibiotics and also subjected to daily dressing of the wound. The wound was allowed to heal by secondary intention and a healthy granulation tissue started to grow on the affected finger.

The patient was discharged with a proper advice regarding antibiotic regimen, insulin, antihypertensive and the other required medication, besides antiseptic dressing of the wound and follow up. The patient had also been planned for split skin graft by the plastic surgery department and was on their follow up. However, the patient was lost to follow up because of the devastating flood of September, 2014 in Kashmir valley.

DISCUSSION

The association between diabetes mellitus and several pathological conditions of hand are well recognized. These include limited joint mobility, Dupuytren's disease, stenosing tenosynovitis (trigger finger), carpal tunnel syndrome and dermatological lesions including bullous diabeticorum, granuloma annulare, necrobiosis lipoidica diabeticorum etc.^{3,9} Further, diabetic patients have increased risk for hand infections. A significant incidence of diabetic hand infections have been reported in tropical regions, particularly Sub-Saharan Africa and the term coined for such infections has been denoted as tropical diabetic hand syndrome (TDHS).^{2,4}

TDHS is an aggressive type of hand sepsis that results in significant morbidity and mortality among patients of diabetes in the tropics.¹⁰ TDHS has also been reported among diabetic patients in the Indian subcontinent.^{7,8} The present case also belongs to a beautiful and naturally gifted part of the subcontinent, the Kashmir valley. Hand infection, as such, is less often known than foot infection and was first described in the United States in 1977 and in Africa in 1984.

TDHS is less well recognized condition and usually manifests as localized infection in the hand, leading to cellulitis. There is a variable swelling and ulceration of the hand resulting in progressive and fulminant hand sepsis. A rapidly progressive synergistic gangrene (Meleney's gangrene) can develop that can affect the entire limb, resulting in a severe morbidity or even mortality without prompt and aggressive medical and surgical intervention.^{5-7,12}

TDHS has to be distinguished from a traditionally described diabetic hand syndrome in which the patient has joint limitation and thickened skin especially of the dorsum of fingers.¹² Unlike diabetic foot ulcers, there is no substantial role of peripheral vascular disease and peripheral neuropathy in the pathogenesis of TDHS.⁴ However in TDHS patients, there is often a history of antecedent minor hand trauma such as scratch, insect bite or just a trivial trauma of which the patient may be

unaware or even no trauma at all.^{2,4,7} Our patient also did not recall any preceding trauma and could, if at all, have been just trivial of which she was unaware.

Presentation of TDHS to hospital is often delayed due to lack of concern, unawareness of the potential risks and initial consultation of traditional local healers.⁴ The same was true in our patient as well, who consulted a local healer initially and afterwards a paramedic before reporting to our hospital. The most common cause of polymicrobial synergistic gangrene is a symbiotic relationship of aerobic gram negative rods in combination with different enteric anaerobes.⁶

Culture of tissue biopsy specimens yields a single bacterial species in more than 75% of cases. However, the swab culture results may be polymicrobial because of contamination and cannot guide optimal antimicrobial therapy.^{6,11,13} The pus culture of the infected wound in our patient also revealed growth of single bacterial species in the form of methicillin resistant staphylococcus aureus sensitive to linezolid and amikacin.

The bacterial growth of the pus culture in our patient was not a result of contamination as the patient showed excellent response after receiving the recommended antibiotics. However, some studies have recommended the initial antibiotic treatment based on polymicrobial coverage.^{2,11,13} The various independent risk factors for TDHS include poorly controlled diabetes, neuropathy, insulin treatment or malnutrition.¹⁵

The present patient was also poorly controlled and was having neuropathy. Keeping in mind severe morbidity and even mortality, the patient of TDHS needs to be hospitalized for aggressive surgical intervention (including debridement, pus drainage or if needed even amputation) and high dose intravenous broad spectrum antibiotic therapy including anaerobic coverage, of course pending culture sensitivity.¹⁵

Without prompt treatment TDHS can lead to permanent disability, limb amputation (13% of TDHS patients required major limb amputation) or even death.¹⁵ The present patient also received prompt surgical and antibiotic therapy (initially broad spectrum but later on recommended antibiotics based on culture sensitivity) that led to her recovery and avoidance of any major complication.

Prevention modalities include patient and staff education regarding proper hand care, nutrition and immediate medical consultation following hand trauma or even after unexplained redness and swelling of hand in diabetic patients. Early recognition of TDHS by the clinician assumes equal importance.^{4,15}

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