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A Case Report on Diabetic Foot Ulcer in a Patient with Long-Standing Uncontrolled Diabetes Mellitus

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ABSTRACT

Diabetic foot ulcer (DFU) represents a major chronic complication of diabetes mellitus (DM) and is a significant public health issue globally, particularly in resource-limited settings. DFUs accounts for a substantial proportion of diabetes-related hospital admissions and are the leading cause of non-traumatic lower limb amputations. This case report presents the comprehensive management of a 60-year-old female with longstanding, poorly controlled type 2 diabetes mellitus who developed a foot ulcer due to peripheral neuropathy and trauma. The ulcer, initially neglected and self-treated, became infected and resulted in sinus formation. Through a coordinated, multidisciplinary approach—encompassing pharmacological intervention, surgical debridement, ophthalmologic care, regular dressings, dietary modification, patient education, and home visits—the patient achieved glycemic control and complete ulcer healing. This case underscores the importance of prompt diagnosis, secondary prevention, and structured follow-up in the management of chronic diabetic complications.

INTRODUCTION

Diabetes Mellitus (DM) is a chronic metabolic disorder characterized by persistent hyperglycemia resulting from defects in insulin secretion, insulin action, or both [1]. The disease is associated with both acute complications (such as diabetic ketoacidosis and hyperosmolar hyperglycemic state) and chronic complications (including retinopathy, nephropathy, neuropathy, and macrovascular diseases) [2]. Among these, diabetic foot ulcer (DFU) is particularly debilitating and prevalent, affecting approximately 15-25% of people with diabetes at some point during their lives [3]. The pathogenesis of DFU involves a triad of peripheral neuropathy, peripheral arterial disease, and susceptibility to infection. In resource-constrained settings, poor health literacy, delayed presentation,

and inadequate health infrastructure further exacerbate outcomes. Early diagnosis and a multidisciplinary treatment approach are essential to preventing amputations and improving quality of life [4].

CASE PRESENTATION

The patient, is a 60-year-old female originally from Sundarganj Deeh, Raebareilly, Uttar Pradesh, currently residing in Delhi since 2 years. She belongs to a lower middle-class socio-economic background and has a primary level of education [5]. She previously worked in a wood-cutting factory, which exposed her to high physical demands and occupational hazards.

She presented to the Urban Primary Health Centre (UPHC) with complaints of a non-healing ulcer on the lateral aspect of the right heel, just below the ankle joint. The ulcer developed following trauma from stepping on an iron nail in the factory, six months ago. The patient attempted self-removal of the nail and applied an over-the-counter ointment. However, the wound worsened, becoming swollen and infected, eventually leading to sinus formation with pus discharge.

She has a known history of type 2 diabetes mellitus (T2DM) for the past 16 years, diagnosed at a Primary Health Centre (PHC) at her hometown after she presented with classical symptoms such as polyuria, polydipsia, headaches, joint pain, palpitations, and tingling sensations in extremities. She was initially managed with Metformin 500 mg once daily but soon became non-compliant due to limited understanding of disease management, poor adherence to lifestyle modifications, and lack of consistent medical follow-up. Her glycemic control remained poor, with random blood glucose levels often ranging between 400–500 mg/dL.

EXAMINATION FINDINGS

General: Conscious, oriented, moderately built and nourished.

Height: 154 cm, Weight: 43.8 kg, BMI: 18.5 kg/m2

Vitals: BP – 124/80 mmHg, HR – 84/min, Temp – afebrile

Local Examination:

Site: Right heel, lateral aspect below ankle joint

Ulcer: Single, oval, ~3.5 x 4 cm, with slough and purulent discharge

Sinus formation with pus draining; margins indurated; surrounding erythema

Depth: Involving subcutaneous tissue; no visible bone or tendon

Neurological:

Sensory: Absent touch and temperature sensation in both feet and hands

Pain: Absent

Motor: Intact

Peripheral Pulses

Dorsalis pedis and posterior tibial pulses present but feeble

Systemic Examination:

Cardiovascular system: S1 and S2 normal, no murmur, pulse 82/min regular

Respiratory system: Normal vesicular breath sounds, no added sounds

Abdominal examination: Soft, non-tender, no organomegaly

Central nervous system: Higher mental functions intact, cranial nerves normal, motor intact, sensory diminished in lower limbs.

Investigations:

LFT: Within Normal Limits

KFT: Within Normal Limits

RBS: 330 mg/dl

FBS: 249 mg/dl

PPBS: 478 mg/dl

HbA1c: 9.2 %

FOLLOW-UP AND MANAGEMENT

A multidisciplinary management plan was formulated and implemented:

Pharmacological Therapy:

Initiated Metformin 1000 mg twice daily

Glimepiride 2 mg twice daily

Vildagliptin 50 mg twice daily

Gabapentine 300 mg BD daily

Surgical and Wound Management:

Referral to the surgical unit where thorough debridement was performed

Regular dressing with aseptic precautions was done at the UPHC

Ophthalmology:

Diagnosed with Non Proliferative Diabetic Retinopathy

Management plan initiated at the ophthalmology outpatient clinic

Dietary and Lifestyle Modifications:

Counseling provided on diabetic diet

Advice on, portion control, foods having high glycemic index, small frequent meals, avoiding refined sugars, and consuming complex carbohydrates

Advised to undergo physical activity for atleast 30 mins each day. Yoga was suggested.

Foot Care and Health Education:

Educated about daily foot inspection

Advised to wear protective footwear

Avoidance of barefoot walking emphasized

Instructions on early signs of infection and when to seek help

Role of Community Physician

Community-Level Support and Home Visits:

Regular home visits to reinforce medication adherence and wound care

Family members involved in care and educated about diabetes management

Follow up:

On follow up of 3 months, after the first visit, the diabetic foot ulcer is the process to healing. The patient does not have any complaints at present. On investigations, FBS was 124 mg/dl and PPBS came to be 190 mg/dl, denoting controlled blood sugar levels.

Figure 1: Diabetic foot ulcer (Before treatment and after follow up).

DISCUSSION

DFU remains a complex and preventable complication of diabetes, primarily resulting from neuropathy, vasculopathy, and infection. This case illustrates how delayed presentation, poor compliance, and inadequate initial treatment can lead to serious complications. The patient's reluctance to seek care following trauma and her attempt to self-treat the wound resulted in the progression of the ulcer and sinus formation.

The presence of peripheral neuropathy contributed significantly to delayed symptom perception, while her poor glycemic control created an environment conducive to poor wound healing and infection. The subsequent development of diabetic retinopathy further reflects the systemic involvement of prolonged hyperglycemia.

Importantly, based on the patient's low body mass index and lower middle-class socioeconomic background, this case may also represent features of Type 5 Diabetes Mellitus. This subtype is more commonly seen in individuals from lower socioeconomic strata, typically characterized by undernutrition during early life followed by the development of diabetes in adulthood. Such individuals tend to have low BMI, poor muscle mass, and insulinopenia without significant insulin resistance [6]. Type 5 diabetes has been increasingly recognized in South Asian populations and presents unique diagnostic and management challenges, often requiring insulin or insulin-sensitizing agents despite low body weight. The International Diabetes Federation has officially recognized Type 5 diabetes, marking a historic shift in the global understanding of malnutrition-related diabetes [7].

This case underscores the importance of a multidisciplinary approach—combining internal medicine, surgery, ophthalmology, nursing care, and community health interventions. Community engagement through health education and home visits played a vital role in ensuring adherence, timely referral, and patient empowerment. In resource-limited settings like India, secondary prevention through early diagnosis and prompt management is key to reducing the burden of advanced diabetic complications.

Community physicians played a pivotal role in the management of this case by facilitating prompt detection, providing structured health education on foot care and lifestyle modification, and ensuring adherence through regular home visits. They coordinated with tertiary care through an efficient referral linkage system involving various departments such as the Preventive OPD at the tertiary hospital. The Preventive OPD serves as the link between the community and the services offered by the various specialities of the tertiary medical college. The involvement of community physicians ensured continuity of care, timely intervention, and patient empowerment in a resource-limited setting.

CONCLUSION

This case report emphasizes that even advanced complications of diabetes, such as DFUs, can be effectively managed through a multidisciplinary approach encompassing early diagnosis, appropriate pharmacological therapy, surgical care, health education, and strong community involvement. This case may represent features of Type 5 Diabetes Mellitus—recently recognized by the International Diabetes Federation—highlighting a historic shift in understanding malnutrition-related diabetes in low-BMI, socioeconomically disadvantaged populations. In low-resource settings, empowering patients through health education and strengthening primary care services can drastically improve outcomes and prevent disability. Adherence to secondary prevention strategies, including

glycemic monitoring, regular follow-up, and patient-centered interventions, is essential for managing chronic conditions like diabetes and avoiding catastrophic complications.

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