

Case Study on Diabetic Foot Ulcer

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ABSTRACT

Diabetic foot ulcer (DFU) is a serious complication of diabetes mellitus associated with increased morbidity, risk of infection, and potential limb amputation. A 68-year-old male with a 32-year history of Type 2 Diabetes Mellitus who presented with a non-healing ulcer over the right second and third toe region, following prior amputation. Clinical evaluation and investigations revealed poor glycemic control (HbA1c: 9.8%), peripheral arterial disease, and wound infection with *Pseudomonas aeruginosa*. The patient was managed with a multidisciplinary approach including intravenous broad-spectrum antibiotics followed by oral step-down therapy, optimization of glycemic control using insulin and oral hypoglycemic agents, and management of peripheral vascular insufficiency with vasodilators and antiplatelet therapy. Supportive care and wound management were also provided. During hospitalization, the patient showed clinical improvement with stable vital signs, resolution of infection, and gradual control of blood glucose levels. The patient was discharged on appropriate medications with advice for strict glycemic control, wound care, and regular follow-up.

KEYWORDS: Diabetic foot ulcer, Meropenem-sulbactam, Patient counselling.

I. INTRODUCTION

Diabetic foot ulcer (DFU) is one of the most serious and common complications of diabetes mellitus, associated with significant morbidity, risk of infection, and lower limb amputation. It is defined as a full-thickness wound occurring below the ankle

in individuals with diabetes, resulting from a complex interaction of peripheral neuropathy, peripheral arterial disease, and impaired wound healing. Chronic hyperglycemia leads to nerve damage, loss of protective sensation, and vascular insufficiency, making the foot vulnerable to minor trauma that can progress into non-healing ulcers.

The presence of peripheral arterial disease further compromises blood flow, reducing oxygen and nutrient delivery to the affected tissues and delaying the healing process. If not managed promptly and effectively, these infections can worsen tissue destruction and may necessitate surgical interventions, including amputation.

II. CASE PRESENTATION

PATIENT DESCRIPTION

A 68-year-old male with a long-standing history of Type 2 Diabetes Mellitus (32 years) presented to the General Surgery department with complaints of an ulcer over the right second and third toe region for one month. The patient reported blackish discoloration of the affected toes and had a recent history of debridement and amputation of the second and third toes performed one month prior to admission. He also had a history of fever before admission but no active discharge at presentation.

PHYSICAL EXAMINATION

On admission, the patient was hemodynamically stable. His vital signs included a temperature of 98.6°F, pulse rate of 84 beats per minute, blood pressure of 140/70 mmHg, oxygen saturation of 100%, and mean arterial pressure of 93 mmHg.

INVESTIGATIONS

Test	Value	Normal	Interpretation
Blood Sugar	220 mg/dL	<140	Hyperglycemia
Platelets	2.5 lakh/cumm	1.5-4.5 lakh	Normal
ESR	107 mm/hr	<20	Elevated (infection)
CRP	20.2 mg/dL	<0.5	Elevated
Hb	20.2 mg/dL	14-17	Mild anemia
PCV	34%	42-52	Low
RBC	3.6 million	4.5-6	Low
HbA1c	9.8%	<6	Poor control

DIAGNOSIS

The patient was diagnosed with diabetic foot ulcer of the right foot complicated by *Pseudomonas aeruginosa* infection, peripheral arterial disease, and uncontrolled Type 2 Diabetes Mellitus, chronic kidney disease, and mild anemia.

TREATMENT

MEROPENEM + SULBACTAM INJ – Used for severe bacterial infection including, given as 1.5 g IV twice daily.

ESOMEPRAZOLE INJ – Used for gastric protection, given as 40 mg IV once daily.

PARACETAMOL INJ – Used for pain and fever, given as 1 g IV as needed.

CHYMORAL FORTE TAB – Used to reduce inflammation and promote wound healing, given as one tablet orally twice daily.

PROBIOTIC CAP – Used to maintain gut flora, given as one capsule orally once daily.

CILOSTAZOL TAB – Used to improve peripheral circulation, given as 100 mg orally twice daily.

XANTHINOL NICOTINATE SR TAB – Used as a vasodilator, given as 500 mg orally once daily.

ATORVASTATIN + ASPIRIN TAB – Used for lipid lowering and antiplatelet action, given as 20 mg + 75 mg orally once daily.

SITAGLIPTIN + METFORMIN TAB – Used for glycemic control, given as 50/500 mg orally twice daily.

FAROPENEM TAB – Used as step-down antibiotic therapy, given as 300 mg orally twice daily.

PROGNOSIS

During hospitalization, the patient remained afebrile with stable vital signs. Wound condition improved with no active discharge, and blood glucose levels were gradually controlled. No new complications were observed.

FOLLOW-UP

The patient was discharged with following medication

FAROPENEM ER TAB – Continued for infection, 300 mg orally twice daily for 7 days.

RABEPRAZOLE TAB – Used for gastric protection, 20 mg orally once daily for 7 days.

CHYMORAL FORTE TAB – Continued for inflammation, one tablet orally twice daily for 7 days.

PROBIOTIC CAP – Continued for gut flora, once daily for 7 days.

MULTIVITAMIN TAB – Continued for recovery, twice daily for 30 days.

HUMAN INSULIN 30/70 – Continued 15-0-8 units subcutaneously.

SITAGLIPTIN TAB – Continued for diabetes, 50 mg once daily.

TELMISARTAN TAB – Used for hypertension, 40 mg once daily.

ATORVASTATIN + ASPIRIN TAB – Continued for cardiovascular protection, once daily.

CILOSTAZOL TAB – Continued for circulation, 100 mg twice daily.

XANTHINOL NICOTINATE SR TAB – Continued as vasodilator, 500 mg once daily.

NEUROBION FORTE TAB – Used for neuropathy, once daily.

III. DISCUSSION

Diabetic foot ulcer is a multifactorial complication involving neuropathy, peripheral arterial disease, and infection. In this case, compromised blood flow and infection with *Pseudomonas aeruginosa* significantly contributed to disease severity.

Management required a multidisciplinary approach, including targeted antibiotic therapy, glycemic control, and vascular support. Step-down antibiotic therapy and adjunctive treatments helped achieve clinical stability. However, long-standing diabetes and comorbidities increase the risk of recurrence and complications, highlighting the need for continuous monitoring and patient education.

PATIENT COUNSELLING

- Maintain strict glycemic control (target HbA1c < 7%) and adhere to insulin and oral antidiabetic medications as prescribed.
- Complete the full course of antibiotics and do not stop any medication without consulting the physician.
- Perform daily foot inspection for cuts, blisters, discoloration, or signs of infection and maintain proper foot hygiene.
- Use appropriate diabetic footwear at all times and avoid walking barefoot to prevent injury.
- Follow lifestyle modifications including a low glycemic index diet, regular non-weightbearing exercise, blood pressure control, and avoidance of alcohol.

IV. CONCLUSION

Diabetic foot ulcer is a serious and potentially limb-threatening complication of diabetes mellitus that requires early recognition and prompt management. The condition is often associated with multiple contributing factors, including poor glycemic control, peripheral arterial disease, neuropathy, and infection, all of which can delay healing and increase the risk of amputation. A multidisciplinary approach involving appropriate antimicrobial therapy, optimization of blood glucose levels, improvement of peripheral circulation, and effective wound care is essential for successful management. This case highlights the importance of timely intervention, rational antibiotic use, and comprehensive patient counselling in achieving favorable clinical outcomes. Long-term prevention depends on strict glycemic control, regular foot

examination, adherence to medications, and lifestyle modifications. Early diagnosis and continuous follow-up play a crucial role in reducing morbidity, preventing recurrence, and improving the overall quality of life in patients with diabetic foot ulcers.