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Managing a Diabetic Foot Ulcer (DFU) with Limited Pressure Relief: A Multi-Disciplinary Team Approach: Case Study

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Case study

This case presentation aims to underscore the challenges faced in providing adequate pressure relief for a patient with a diabetic foot ulcer (DFU) due to resource limitations. A 49-year-old active diabetic woman, wearing inappropriate footwear, regularly visits the local community clinic for two months. The interdisciplinary team, including nurses, doctors, pharmacists, radiographers, and podiatrists, collaborates on the intervention plan. Wound care is administered every other week, and the patient manages her wound care between visits. Research indicates that neuropathic DFUs on the plantar surface heal effectively with proper offloading using insole/orthoses devices and suitable footwear. However, in disadvantaged communities, patients often cannot afford such pressure relief measures, resorting to inadequate footwear like plastic thong sandals with thin soles, leading to friction and shear pressure between the toes.

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INTRODUCTION

Diabetes mellitus (DM) has emerged as a significant challenge within health systems, posing a global public health threat that has surged notably over the last two decades.(AbuHammad et al., 2023; Yazdanpanah et al., 2015)According to the 2021 report from the International Diabetes Federation (IDF), approximately 537 million adults globally have diabetes, representing roughly 10% of the total population.(Dhatariya et al., 2020). Chronic infections in wounds present a substantial health issue, particularly diabetic foot ulcers (DFU) that reach severe levels. These complications from foot ulcers are responsible for approximately 24.4% of healthcare expenditures related to diabetes.(Kurian et al., 2023; Sargen et al., 2013). The worldwide incidence of DFU stands at 6.3%, with higher rates observed in males and individuals with type 2 diabetes mellitus (DM) compared to females and those with type 1 DM.(Zhang et al., 2017)A recent investigation revealed that the survival rates at one year, two years, and five years for patients with DFU were 81%, 69%, and 29%, respectively, underscoring a solid link with mortality. (Brennan et al., 2017). Healing of foot ulcers is less probable in diabetic individuals due to intrinsic deficiencies in the wound-healing process, such as compromised collagen cross-linking, altered activity of matrix metalloproteinases, and immune-related factors. (Hobizal & Wukich, 2012). Management approaches encompass patient education, utilization of appropriate wound dressings, debridement, effective offloading, blood glucose regulation, infection control, revascularization, and advanced therapeutic interventions.(Pena et al., 2020; Yazdanpanah et al., 2015).

In a government-run community clinic in a disadvantaged area, limited resources pose challenges in providing optimal

healthcare to patients with complex needs. This case involves a 49-year-old female with a medical history of diabetes and smoking, seeking wound care for a diabetic foot ulcer (DFU) under the first metatarsal on her right foot. Due to budget constraints, the patient lacked access to appropriate footwear and foot orthoses, essential for offloading the DFU and promoting healing. This study discusses the alternative management plan to address these challenges and facilitate wound healing.

Examination Findings:

The patient's examination revealed controlled glucose levels, palpable pedal pulses, and slight neuropathy in the plantar surface. Limited ankle dorsiflexion and signs of Charcot neuropathy were noted, indicating a high-risk active ulcer. Imaging ruled out osteomyelitis, although advanced diagnostic tests were unavailable.

Clinical Hypothesis:

The patient's DFU, compounded by inappropriate footwear and neuropathy, required urgent attention. Given the lack of resources for conventional offloading devices, a total contact cast (TCC) was proposed to offload the ulcer and manage local infection.

Intervention:

Despite resource limitations, the patient received wound care, antibiotics for infection, and instructions for offloading the foot until the next visit. A TCC was recommended for the subsequent appointment.

Outcome:

At follow-up, the ulcer size was reduced, and the infection cleared, showcasing the effectiveness of the alternative management approach. Despite economic constraints, collaboration between healthcare providers and the patient led to favorable outcomes and a sense of partnership in care delivery.

DISCUSSION:

Ethical considerations revolved around resource allocation, patient autonomy, and beneficence. Despite economic disparities, the healthcare team prioritized patient well-being and maximized available resources to achieve healing goals. This case highlights the challenges and ethical dilemmas faced in resource-limited settings, emphasizing the importance of adaptive and patient-centered care approaches.

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