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Invasive plantar aspergillosis in an uncontrolled diabetic agricultural worker: A case report

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Abstract

Background: Invasive aspergillosis is an uncommon fungal infection typically seen in immunocompromised individuals. Uncontrolled diabetes mellitus is an increasingly recognized risk factor, particularly in patients with chronic foot lesions.

Case Presentation: Here is a report a rare case of invasive plantar aspergillosis caused by Aspergillus fumigatus in a 60-year-old female who is an agricultural worker with uncontrolled type 2 diabetes mellitus. This patient presented with a painful swelling on the sole of the left foot. Fine needle aspiration cytology demonstrated presence of fungal hyphae with septae, and fungal culture confirmed Aspergillus fumigatus. The patient was treated with systemic antifungal therapy and surgical debridement, with good recovery.

Conclusion: This case underscores the importance of invasive fungal infections as one of the differential diagnosis in foot lesions of diabetic patients, particularly those with exposure to soil. Early diagnosis and prompt treatment with antifungal medication are crucial for favorable outcomes.

Keywords: Invasive aspergillosis; Diabetes mellitus; Plantar foot lesion; *Aspergillus fumigatus*; FNAC.
Abbreviations: FNAC: Fine Needle Aspiration Cytology; MGG: May Grunwald Giemsa.

Introduction

Invasive aspergillosis is a potentially life-threatening fungal infection predominantly affecting immunocompromised patients, such as those with hematological malignancies, organ transplantation, or poorly controlled diabetes milletus [1-4]. Uncontrolled diabetes mellitus has emerged as an important risk factor due to impaired neutrophil function, vascular insufficiency, and delayed wound healing [1-3].

Primary aspergillosis involving sin and subcutis is rare and usually occurs following direct entry of fungal spores through minor trauma [4,5]. The foot is not a common site of involvement, and such lesions

may clinically masquerade as bacterial abscesses or soft tissue tumors, leading to diagnostic dilemma [5]. We describe an uncommon case of invasive plantar aspergillosis in an uncontrolled diabetic agricultural worker, emphasizing the diagnostic role of cytology.

Case Presentation

A 60-year-old female agricultural worker with a long-standing history of uncontrolled type 2 diabetes mellitus presented with a painful swelling on the plantar surface of her left foot for two weeks.

On physical examination, a firm, tender swelling was noted over the plantar aspect of the left foot, measuring approximately 4 cm in diameter. The overlying skin appeared intact, but exhibited mild erythema and local rise in temperature.

Investigations

Fine Needle Aspiration Cytology (FNAC) of the lesion was done. The procedure yielded purulent material. Slides were stained with MGG and revealed fungal hyphae with septae and acute-angle branching against of subacute inflammatory background, suggestive of a fungal infection, with features favoring *Aspergillus* [5] (Figures 1,2).

Fungal culture demonstrated growth of *Aspergillus fumigatus*, confirming the diagnosis.

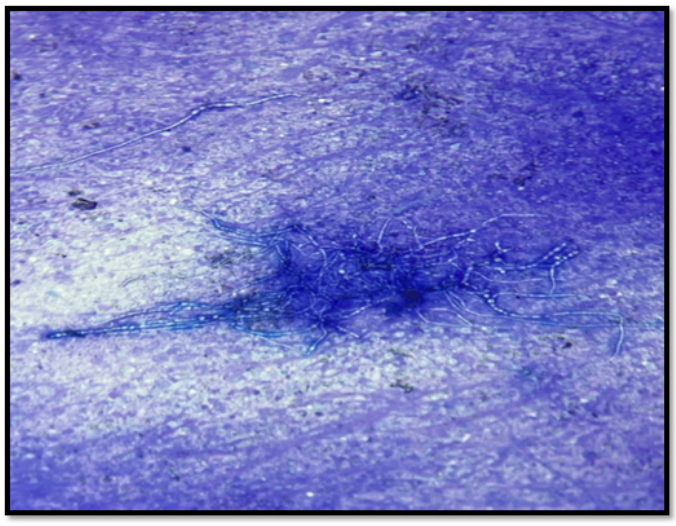

Figure 1: Fine-needle aspiration cytology smear from the plantar foot lesion showing numerous thin, septate fungal hyphae with acute-angle branching, arranged in tangled clusters against a necrotic and inflammatory background, consistent with Aspergillus species (MGG stain 400×).

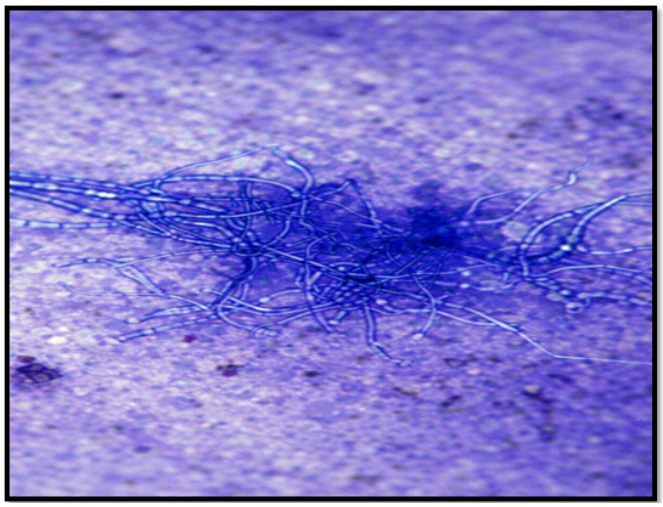

Figure 2: FNAC smear under oil immersion revealing septate fungal hyphae with acute-angle branching, consistent with Aspergillus species (MGG stain×1000).

Treatment

The patient was started on intravenous antifungal medication following confirmation on fungal culture. Surgical clearance of the affected area was done to remove necrotic tissue and reduce fungal burden [1,2]. Uncontrolled diabetes was addressed and strict glycemic control was achieved with insulin therapy and proper diet. Regular wound care was provided.

Outcome and follow-up

After completion of antifungal therapy, the patient showed remarkable improvement with progressive healing of the plantar lesion. No recurrence was noted during follow-up.

Discussion

Invasive aspergillosis involving the foot is a case of rarity and often results from direct entry of fungal spores into compromised skin barrier [4,5]. Diabetes mellitus predisposes patients to such infections due to impaired host immunity and poor local tissue perfusion [1-3]. Exposure to soil, as seen in agricultural workers, further increases the risk of infection [5].

FNAC serves as a fast and minimally invasive diagnostic tool, allowing early cytologic diagnosis and initiation of antifungal therapy [5]. Medical and surgical management in combination, remains the mainstay for treatment and significantly improves outcomes [1,2].

Conclusion

Invasive plantar aspergillosis should be considered as a differential diagnosis in diabetic patients presenting with non-healing foot lesions, especially those with soil exposure. Early cytological diagnosis, prompt antifungal therapy, and surgical intervention are essential to for good recovery [1-5].

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