

Onychomycosis in diabetes mellitus: the emerging importance of non-dermatophyte fungi and accurate mycological diagnosis

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Editorial

Diabetes mellitus represents one of the most significant global health challenges and is associated with an increased risk of infectious complications due to impaired immune responses, vascular abnormalities, and metabolic disturbances.¹ While diabetic foot ulcers, neuropathy, and bacterial infections have received considerable clinical attention, fungal infections affecting the nail unit (onychomycosis) remain an under-recognized problem despite their potential impact on diabetic foot health.

Onychomycosis is often regarded as a minor or cosmetic nail disorder; however, in individuals with diabetes mellitus, it may represent an important clinical concern. Infected nails can become thickened, brittle, and deformed, potentially causing mechanical pressure and trauma to surrounding tissues. These changes may increase susceptibility to secondary bacterial infections, particularly among patients with peripheral neuropathy or impaired circulation.^{2,3}

The diabetic foot environment provides favorable conditions for fungal persistence and progression. Hyperglycemia, reduced immune function, peripheral vascular disease, and neuropathy may contribute to increased fungal colonization and delayed resolution of infection.^{1,3} Therefore, recognition and appropriate management of onychomycosis should be considered an integral component of comprehensive diabetic foot care.

From a medical mycology perspective, onychomycosis is a complex infection caused by various fungal groups, including dermatophytes, yeasts, and non-dermatophytic moulds.⁴ Although dermatophytes have traditionally been considered the predominant causative agents, increasing evidence suggests that non-dermatophytic moulds and *Candida* species may play a substantial role, particularly among patients with underlying conditions such as diabetes mellitus.⁵

Our previous investigation among diabetic patients in Benghazi, Libya, highlighted the occurrence and diversity of fungal pathogens associated with onychomycosis in this population. The study identified dermatophytes, *Candida* species, and non-dermatophytic moulds as important fungal agents, emphasizing the value of laboratory-based mycological investigations for accurate diagnosis and appropriate therapeutic decisions.⁶

Despite advances in diagnostic approaches, the identification of fungal nail infections remains challenging because several non-fungal nail disorders may present with similar clinical manifestations. Direct microscopy, fungal culture, and molecular diagnostic techniques can improve pathogen identification and support targeted antifungal management.^{4,5} This is particularly important in diabetic patients, where delayed diagnosis or inappropriate treatment may contribute to prolonged infection and increased risk of complications.

Management of onychomycosis requires an individualized strategy based on the identified fungal species, infection severity, and patient-related factors. Antifungal therapy, whether topical or systemic, should be selected carefully while considering potential drug interactions and adverse effects.⁵ In parallel, optimal glycemic control, appropriate foot hygiene, and patient education remain essential strategies for reducing diabetic foot complications.^{1,3}

Medical microbiologists have an important role in monitoring the changing epidemiology of fungal nail infections. Regional studies are particularly valuable because fungal species distribution may vary according to geographical location, environmental conditions, and patient characteristics. Strengthening mycological surveillance and improving laboratory diagnostic capacity can contribute to better clinical outcomes and more effective management strategies.

Addressing onychomycosis in diabetic patients requires collaboration between microbiologists, dermatologists, diabetologists, and primary healthcare providers. Increasing awareness of this infection may help shift its perception from a simple nail disorder to a relevant component of diabetic foot health.

In conclusion, onychomycosis represents a clinically significant fungal infection among individuals with diabetes mellitus. Early recognition, accurate identification of fungal pathogens, appropriate antifungal therapy, and preventive foot-care strategies are essential to minimize complications and improve patient quality of life. Further research is needed to better define fungal epidemiology and optimize diagnostic and therapeutic approaches in diabetic populations.

Author Contribution

W.M.B. Bridan contributed to the conception, literature review, scientific discussion, and preparation of the manuscript

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Conflicts of interest

The authors declare that there are no conflicts of interest.

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