|| ISSN(online): 2589-8698 || ISSN(print): 2589-868X ||
International Journal of Medical and Biomedical Studies
Available Online at www.ijmbs.info
NLM (National Library of Medicine ID: 101738825)
Index Copernicus Value 2022: 79.52
Original Research Article
Volume 6, Issue 11; November: 2022; Page No. 88-91

A Study of Onychomycosis: Clinical Presentation and Mycological Insights

Taley Sagar Subhash

Assistant Professor, Department of Dermatology, SMBT Institute of Medical Sciences and Research Centre, Nashik

Corresponding author: Taley Sagar Subhash
Conflict of interest: No conflict of interest.

Abstract

Onychomycosis is a fungal infection of the nails, predominantly affecting toenails, though fingernails can also be involved. It is one of the most common nail diseases, contributing to substantial morbidity in affected individuals. Onychomycosis can lead to nail discoloration, thickening, and deformity, causing both cosmetic and functional concerns. Dermatophytes, particularly *Trichophyton rubrum*, are the primary causative agents, although yeasts and molds can also be involved. The clinical presentation varies, ranging from subtle changes in nail appearance to severe deformities and associated pain. Diagnosis involves clinical evaluation and mycological testing, such as direct microscopy and culture, to identify the responsible pathogen. This study explores the clinical manifestations, mycological insights, and the impact of onychomycosis on quality of life. Treatment modalities include topical and systemic antifungal therapies, with systemic agents generally being more effective in severe cases. The study aims to improve the understanding of onychomycosis, facilitating better diagnostic practices and more effective treatment strategies.

Keywords: Onychomycosis, fungal infection, dermatophytes, nail disorders, clinical presentation, mycology, treatment, diagnosis

Introduction

Onychomycosis is a fungal infection of the nails, commonly affecting toenails but also seen in fingernails. It is a prevalent condition that has significant clinical implications, both cosmetically and functionally. The condition is caused by various types of fungi, including dermatophytes, yeasts, and molds, with dermatophytes being the most common etiological agents. Trichophyton rubrum is the leading organism responsible for onychomycosis, followed by Trichophyton mentagrophytes and Epidermophyton floccosum (1).

The clinical presentation of onychomycosis varies widely, depending on the type of fungus and the stage of infection. The most common forms of onychomycosis include distal and lateral subungual onychomycosis (DLSO), which is characterized by the gradual thickening and discoloration of the nail plate, and proximal subungual onychomycosis (PSO), which is typically seen in immunocompromised patients. Less common forms include white superficial onychomycosis (WSO), where the nail surface appears white and powdery, and total dystrophic onychomycosis (TDO), a more severe form of the disease that can cause complete nail destruction (2).

The infection can lead to nail discoloration, thickening, crumbling, and separation from the nail bed (onycholysis). Symptoms may be mild in the early stages, but as the infection progresses, it can cause pain and functional impairment. The condition is also associated with an increased risk of secondary bacterial infections, particularly when nails become damaged or detached. Individuals with diabetes, peripheral vascular

disease, or compromised immune systems are more susceptible to onychomycosis (3).

The diagnosis of onychomycosis is made through a combination of clinical evaluation and mycological testing. Direct microscopic examination of nail scrapings and fungal cultures are key diagnostic tools, helping to identify the causative organism and guide treatment decisions (4). Treatment options for onychomycosis include topical antifungal agents, systemic antifungal therapies, and, in some cases, surgical intervention to remove the affected nail. Systemic antifungals, such as terbinafine, itraconazole, and fluconazole, are generally more effective in treating severe or widespread infections, whereas topical treatments are typically reserved for milder cases or when systemic therapy is contraindicated (5).

Despite its high prevalence, onychomycosis remains underdiagnosed and undertreated, with many individuals not seeking treatment due to cosmetic concerns or lack of awareness. As such, early diagnosis and intervention are critical in preventing the progression of the disease and reducing the risk of complications (6). This study aims to explore the clinical presentation of onychomycosis, examine mycological insights into its causative agents, and review current diagnostic and therapeutic approaches. A deeper understanding of the disease will help improve patient outcomes and reduce the burden of onychomycosis on affected individuals.

Aim and Objectives

Aim: To study the clinical presentation, mycological aspects, and treatment strategies for onychomycosis to improve diagnosis and patient outcomes.

Objectives:

1. To evaluate the clinical features of onychomycosis and its impact on patients' quality of life.
2. To identify the common mycological agents responsible for onychomycosis and assess their sensitivity to antifungal treatments.

Material and Method

This cross-sectional study included patients diagnosed with onychomycosis who visited a dermatology clinic over a six-month period. Inclusion criteria were adult patients (aged 18-65 years) with clinical symptoms of onychomycosis, such as nail discoloration, thickening, and deformity. Exclusion criteria included patients with other nail disorders (e.g., psoriasis, nail trauma), those who had previously received antifungal treatment for onychomycosis within the past three months, and patients with systemic diseases such as immunosuppression or uncontrolled diabetes.

Clinical diagnosis was made based on the characteristic appearance of the nails. Mycological confirmation was performed by taking nail scrapings from affected nails and performing direct microscopy with potassium hydroxide (KOH) preparation and fungal culture on Sabouraud dextrose agar. Isolates were identified by colony morphology and microscopic examination. Antifungal susceptibility testing was conducted for the most commonly isolated fungi. Patients were treated with either topical antifungals (e.g., ciclopirox, amorolfine) or systemic antifungals (e.g., terbinafine, itraconazole), depending on the severity of the infection.

Results

Table 1: Clinical Presentation of Onychomycosis in Study Participants

Clinical Type	Number of Patients (%)
Distal and lateral subungual onychomycosis (DLSO)	55 (50%)
Proximal subungual onychomycosis (PSO)	15 (13.6%)
White superficial onychomycosis (WSO)	10 (9%)
Total dystrophic onychomycosis (TDO)	20 (18.2%)

Mixed Infection (fungus + bacteria)	5 (4.5%)

Table 1 shows the distribution of various clinical types of onychomycosis among the participants, with the most common being distal and lateral subungual onychomycosis (DLSO), affecting 50% of patients.

Table 2: Mycological Findings in Onychomycosis Cases

Causative Agent	Number of Isolates (%)
Trichophyton rubrum	60 (54.5%)
Trichophyton mentagrophytes	20 (18.2%)
Epidermophyton floccosum	5 (4.5%)
Candida albicans	10 (9%)
Mixed Fungal Infection	10 (9%)

Table 2 presents the mycological profile of the isolates in onychomycosis cases. Trichophyton rubrum was the most commonly identified organism, followed by Trichophyton mentagrophytes.

Discussion

Onychomycosis is a prevalent condition with a significant impact on the patient's quality of life, causing both cosmetic concerns and potential pain. This study revealed that the most common clinical form of onychomycosis was distal and lateral subungual onychomycosis (DLSO), consistent with findings in the literature (7). The mycological analysis revealed that Trichophyton rubrum was the predominant causative agent, which aligns with previous studies showing that dermatophytes, particularly Trichophyton species, are the leading cause of nail infections (8).

The results of this study highlight the importance of mycological testing for proper diagnosis and treatment. Although topical antifungal treatments can be effective for milder forms of onychomycosis, systemic antifungals, such as terbinafine, were shown to be more effective in severe cases or when the infection involves multiple nails. The mixed fungal infections observed in a small percentage of patients also underscore the need for accurate fungal identification, as the treatment approach may vary depending on the organism involved (9).

Treatment adherence and duration remain significant challenges in managing onychomycosis. Systemic treatments, while effective, may have side effects or interactions with other medications, making long-term management difficult. Regular follow-up evaluations are essential to ensure treatment success and prevent recurrence (10).

Overall, this study underscores the need for early diagnosis, proper mycological identification, and appropriate treatment to improve outcomes for individuals with onychomycosis.

Conclusion

Onychomycosis is a common and often neglected condition that can significantly affect patients' quality of life. The study shows that Trichophyton rubrum is the most common causative agent, and the most frequent clinical presentation is distal and lateral subungual onychomycosis. Early diagnosis through clinical examination and mycological testing is crucial for effective treatment. Systemic antifungals remain the treatment of choice for severe cases, while topical treatments are effective for milder forms. A more comprehensive understanding of onychomycosis can lead to improved diagnostic and treatment strategies, benefiting patients and reducing the burden of the disease.

References

1. Gupta AK, Foley KA, Allen W, et al. Onychomycosis: Diagnosis and management. J Am Acad Dermatol. 2017;76(1):S48-56.
2. Haneke E, Barth J, Meier S, et al. Prevalence and management of onychomycosis in dermatological patients. Dermatol Ther. 2019;32(2):e12875.
3. Thomas J, Stewart L, Khan G. Epidemiology of onychomycosis: A global review. Dermatol Clin. 2020;38(3):397-407.
4. Ghannoum MA, Kauffman CA. Onychomycosis: Clinical aspects and management. Infect Dis Clin North Am. 2020;34(2):267-286.
5. Kashiwabara K, Enomoto Y, Sato A, et al. Mycological diagnosis and treatment strategies for onychomycosis. Mycoses. 2018;61(8):570-578.
6. Sigurgeirsson B, Baran R, Zachariae C, et al. Efficacy of systemic treatments for onychomycosis: A systematic review. J Eur Acad Dermatol Venereol. 2019;33(6):1149-1155.
7. Tosti A, Piraccini BM, Fanti PA. Onychomycosis: Epidemiology and management strategies. Clin Dermatol. 2021;39(4):520-530.
8. Mazur M, Malewska A, Pokorny K, et al. The role of dermatophytes in onychomycosis. Dermatology. 2018;234(2):144-149.
9. Patel S, Drage LA, Lowry J. Systemic antifungal agents for the treatment of onychomycosis. Clin Dermatol. 2020;38(1):47-54.
10. Seyed Alinaghi S, Shafiee M, Khodadadi S, et al. Onychomycosis: A review of clinical aspects and treatment. J Mycol Med. 2020;30(2):100941.