

CHAPTER 5

DERMATOPHYTIC INFECTIONS: A GROUP OF IMITATOR DISEASES

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INTRODUCTION

Dermatophytic fungi, which are members of the onygenalean family *Arthrodermataceae*, are among the most common agents of infectious disease in both humans and animals worldwide (1). The history of medical mycology began in 1841, with the discovery of an anthropophilic dermatophyte species, the etiologic agent of human favus, known as *Trichophyton schoenleinii* (2, 3). Subsequently, during 1840-1999, the taxonomy of dermatophytes was based on morphological, biochemical, and physiological criteria (1). In the last two decades, the studies of Gräser et al. (4, 5) established the modern taxonomic approach.

5.1. Taxonomy

Classical taxonomy describes three main genera in dermatophytes according to macroconidia characteristics: *Epidermophyton*, *Microsporum*, and *Trichophyton* (1). However, during the 20th century, there was a huge bias toward naming fungi without genealogical agreement (6). Importantly, the main criteria for the classification of fungi, including dermatophytes, have shifted from phenotype to genotype (7). Beginning on January 1, 2013, one species name has been delimited, and pleomorphic species names have been abandoned, including teleomorph names (6, 7). Although the internal transcribed spacer (ITS) region is optimal for routine diagnostics, β -tubulin, 60S, and the large subunit gene regions of rDNA provide additional data necessary to distinguish individual members of species complexes such as *Trichophyton mentagrophytes* (6).

Recently, using multilocus phylogenetic analysis, de Hoog et al. (6) confirmed generic synonymies in the following seven clades: *Trichophyton* (clade A), *Epidermophyton* (clade B), *Nannizzia* (clade C), *Paraphyton* (clade D), *Lophophyton* (clade E), *Microsporum* (clade F), and *Arthroderma* (clade G). A current update

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antifungal drugs occurs in 40-70% of patients because of co-existing ancillary clinical conditions (diabetes, arterial and vascular diseases, Down syndrome, and Raynaud syndrome), traumatic dystrophy, and immunodeficiency (274). Antifungal selection should be made according to antibiograms in resistant cases (275). In immunosuppressed patients, dermatophytes cause atypical and invasive infections. If these patients are diagnosed late, infection can spread to other organs. Occlusive dressing with a 40% urea cream may be used in cases of oral treatment failures. Relapse after itraconazole treatment is more than twice as high as that after terbinafine treatment (92). Because of the increase in organ transplants in current times, early diagnosis and treatment are essential.

5.7. Conclusion

Dermatophytic fungi are among the most common agents of infectious disease in the world, affecting the hair, skin, and nails. Dermatophytic infections may have different clinical presentations, varying according to the immune response of the host and characteristics of the dermatophyte species. Of note, dermatophytic infections can mimic various allergic and reactive dermatoses, underscoring the need to consider various disease manifestations when forming a diagnostic hypothesis. We believe that this chapter makes a significant contribution to the literature because it provides detailed differential diagnoses to prevent unnecessary systemic corticosteroid treatments and avoid late or wrong diagnoses.

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