

Hospital Based KOH Wet Preparation Assessment of the Distribution of Dermatophytes

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Conflict of interest: Nil

Abstract

Aim: The purpose of this study is to determine the prevalence of dermatophytes in Bihar and to identify the causal agents.

Materials and Methods: The present study was conducted in the Department of Microbiology, ICARE Institute of Medical Science and Research and Dr Bidhan Chandra Roy Hospital, Haldia , West Bengal, India, duration of one year. A total of 200 samples were gathered from dermatological OPD patients.

Results: A total of 200 samples were sent in for fungal testing. In 239 samples, the KOH mount was positive for fungal elements, and in 108 samples, the culture was positive.

Conclusion: In the current research area, dermatophytosis has been recorded throughout the year, with an increase in the predominance of particular species. Dermatophytes' infections are found all throughout the world, however superficial mycoses are more common in India, where heat and moisture play a big role.

Keywords: dermatophytosis, fungal elements, KOH mount

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Introduction

Superficial mycoses refer to the diseases of the skin, nail, and hair caused by fungal agents. Over the past decades, the prevalence of these infections has been on a rising trend; accordingly, they have affected 20-25% of the world's population. These diseases are more common in the tropical countries due to humidity, elevated temperature, and sweating. The major examples of superficial mycoses include dermatophytosis, pityriasis versicolor, and candidiasis [1].

The clinical lesions caused by the fungi are highly variable and closely resemble other

skin diseases. Therefore, it is necessary to make a confirmed laboratory diagnosis of superficial skin infection. [2-3]

The severity of dermatophytic infections depends on a variety of factors, such as host reactions to the metabolic products of the fungi, virulence of pathogenic species or particular strain, anatomical site of the infection, and local environmental risk factors. [4]

The dermatophytic infection spreads easily by direct contact with the infected humans and animals or through fomites. Although the

infection is non-invasive and curable, its widespread nature and therapeutic costs are major public health problems, imposing a high economic burden on society, especially in the developing tropical countries like India. [5]

Dermatophytosis is the most common superficial fungal infections caused by dermatophytes, which are capable of growing by invading the keratinized tissues such as skin, hair and nail in humans. [6] Dermatophytes are a distinct group of fungi that infect the keratinized tissues like skin, hair, and nails of humans and animals and can produce a variety of cutaneous infections. This group of fungi are closely related antigenically, physiologically, and morphologically and are commonly known as ringworm fungi. [7-8]

Material & Methods:

The present study was conducted in the Department of Microbiology, ICARE Institute of Medical Science and Research and Dr Bidhan Chandra Roy Hospital, Haldia, West Bengal, India duration of one year. A total of 200 samples were gathered from dermatological OPD patients.

Prior to the start of the investigation, the Institute ethics committee gave their approval.

The patient underwent a thorough history and clinical examination, as well as a detailed inspection of his or her skin lesions. The study included all new cases of

dermatophytosis from all age groups and both sexes who gave their consent.

Patients who had recently been treated with an antifungal or topical steroid were excluded from the research.

The samples were taken based on the condition of the skin, such as scales, crusts, nail clippings, or hair plucking. For the presence of fungal elements, a portion of the material was submitted to KOH wet preparation (10% for skin and hair, 40% for nail). The remaining specimen was infected with chloramphenicol and cycloheximide on SDA and cultured for up to 4 weeks at 25°C. Species identification was based on colony morphology, teased mount detection using LPCB, and urease test results.

Results:

A total of 200 samples were sent in for fungal testing. 71% of the study participants were male and 29% were females. [Table 1]

In 239 samples, the KOH mount was positive for fungal elements, and in 108 samples, the culture was positive.[Table 2]

Dermatophytes were found in 134 of the culture-positive samples, and they were isolated from 103 skin scrapings, 19 nail clippings, and 11 hair samples.[Table 3]

T.mentagrophytes accounted for 69 of the 134 dermatophytes isolated, whereas T.rubrum accounted for 39 and T.violeceum for 16. Microsporium and Epidermophyton were not found.[Table 4]

Table 1: Distribution of patients according to sex

	Male	Female	Total
No. of cases	142	58	200
Percentage	71	29	100

Table 2: Distribution of sample on the basis of KOH mount and Culture

Total no. of cases	KOH positive	Culture positive
239	131	108

Table 3: Distribution of dermatophytic cases based on clinical samples

Samples	Total no. of cases
Skin	103
Hair	11
Nail	19
Total	134

Table 4: No. of species isolated

Organism isolated	No. of isolates
T.mentagrophytes	69
T.rubrum	39
T.violeceum	16

Discussion:

In our investigation, dermatophytosis cases were diagnosed using a combination of KOH mount demonstration under the microscope and SDA culture.

Direct KOH mount was determined to be a good screening test among them, with 90.5 percent of samples positive in KOH mount and 62.2 percent positive in culture, according to some research. [9] T.mentagrophyte (49.5%) is the predominant dermatophyte isolated followed by T.rubrum (34.9%) and T.violaceum (15.4%) similar to some other studies. Like other studies in our study also Trichophyton species were more commonly isolated than Epidermophyton and Microsporum. [10]

Mycotic infections are found all throughout the world, with superficial mycoses being more common in tropical areas where heat and moisture play a key role in the growth of these organisms. [11] Superficial skin infections caused by dermatophytes resulting in local inflammation are common in humans. [12]

According to recent findings, males are more susceptible to dermatophytosis than females.

This could be linked to their line of employment, which causes excessive perspiration and requires them to contact with a wide range of people. The lower incidence in females may be also due to the non-reporting of the female patients to the

hospitals due to the prevailing social stigma in the rural population in India. [13, 14,15]

Conclusion:

In the current research area, dermatophytosis has been recorded throughout the year, with an increase in the predominance of particular species. Dermatophytic infections are found all throughout the world, however superficial mycoses are more common in India, where heat and moisture play a big role.

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