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Original Research Article

Mycological Profile of Dermatophytosis in a Tertiary Care Centre of Tripura

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Conflict of interest: Nil

Abstract:

Introduction: Dermatophytoses are the superficial fungal infection of keratinized tissues. Dermatophytes are one of the common fungal agents implicated in superficial skin infections with a worldwide prevalence of 20-25%. Clinically these are termed as tinea infections and are described according to the site of involvement. Dermatophytosis was an easily treatable condition with the commonly used antifungals. There has been an increasing and changing trend over the last few years, presenting as treatment unresponsive and recurrent cases which might be due to various reasons like indiscriminate use of antibiotics, over the counter use of steroids, non compliance of patients.

Materials and Methods: A hospital based cross-sectional study was undertaken in a tertiary care centre of Tripura for a period of one year. A total of 400 patients were included in the study. Samples were collected depending upon the site of infections. Potassium hydroxide (KOH) mount and fungal culture were done from samples.

Results: 400 patients were included in the study among which 290 (72.5%) were males and 110 (27.5%) were females. The patients were from 6-65 years of age and most of them were in the age groups of 30-60 years. Dermatophytic infection was positive in 184 (46%) patients. Major isolates were found to be Trichophyton spp followed by Microsporum spp.

Conclusion: The prevalence of dermatophytic infections is 46%. Tinea corporis is the dominant clinical manifestation involving 65% of the total cases and Trichophyton mentagrophytes is the most common isolate responsible for dermatophytosis.

Keywords: Tinea corporis, Trichophyton, Microsporum.

Introduction

Dermatophytoses are the superficial fungal infection of keratinized tissues- skin, hair and nail. They are one of the most common diseases in the world, caused by the dermatophytic fungi such as Trichophyton, Microsporum, and Epidermophyton colonising keratinized tissue of the hair, skin, and nails.[1,2] In the past several years, it has emerged as a general public health problem in our country. Studies from different regions reveal varying patterns of etiological distribution of the disease.[3]

Dermatophytes are one of the common fungal agents implicated in superficial skin infections with a Worldwide prevalence of 20-25%.Typical infections caused by dermatophytes are known as ringworm infections. Clinically these are termed as tinea infections and are described according to the site of involvement. Dermatophytes have been reported all over the world with variations in their epidemiologic, distributions, incidence, and hosts. Factors responsible for these variations include geographic location and climate, hygiene, overcrowding, culture, health care etc.[4] Dermatophytosis was an easily treatable condition with the commonly used antifungals. These infections can be confused with other skin disorders, hence a preliminary laboratory diagnosis is useful at the beginning of the treatment.[5]

There has been an increasing and changing trend over the last few years, presenting as treatment unresponsive and recurrent cases which might be due to various reasons like indiscriminate use of antibiotics, over the counter use of steroids, non compliance of patients.

Aim and Objectives:

1. To study the spectrum of dermatophytosis.
2. To assess the mycological profile of dermatophytosis.

Material and Methods:

A hospital based descriptive cross-sectional study was undertaken in a tertiary care hospital of Tripura for a period of one year. Samples were collected from the individuals who were clinically diagnosed with Dermatophytosis. Patients who have applied any kind of topical medications were excluded from the study. An Informed and written consent was obtained from all the study participants. The samples were collected depending upon the site of infections. The area was cleaned with 70% alcohol and allowed to dry before collecting the specimen. Skin scrapings were collected from the edge of the lesion with sterile surgical blade and nail clippings were collected in case of nail. Each specimen was divided into two parts, one for Potassium hydroxide (KOH) mount and other for fungal culture. Direct microscopic examination was done using 10% KOH for skin, and 40% for nail clippings, and fungal elements were looked for.

The material was then inoculated in Sabouraud's dextrose agar (SDA) and was incubated at 25°C. They were observed for a growth period of 4–6 weeks before labelling it negative. Speciation of the isolate was done based upon growth rate, colony morphology, and lactophenol cotton blue (LPCB) mount. Slide culture was performed and biochemical test such as urease test and hair perforation test was done. Methodology is depicted in the flowchart below.

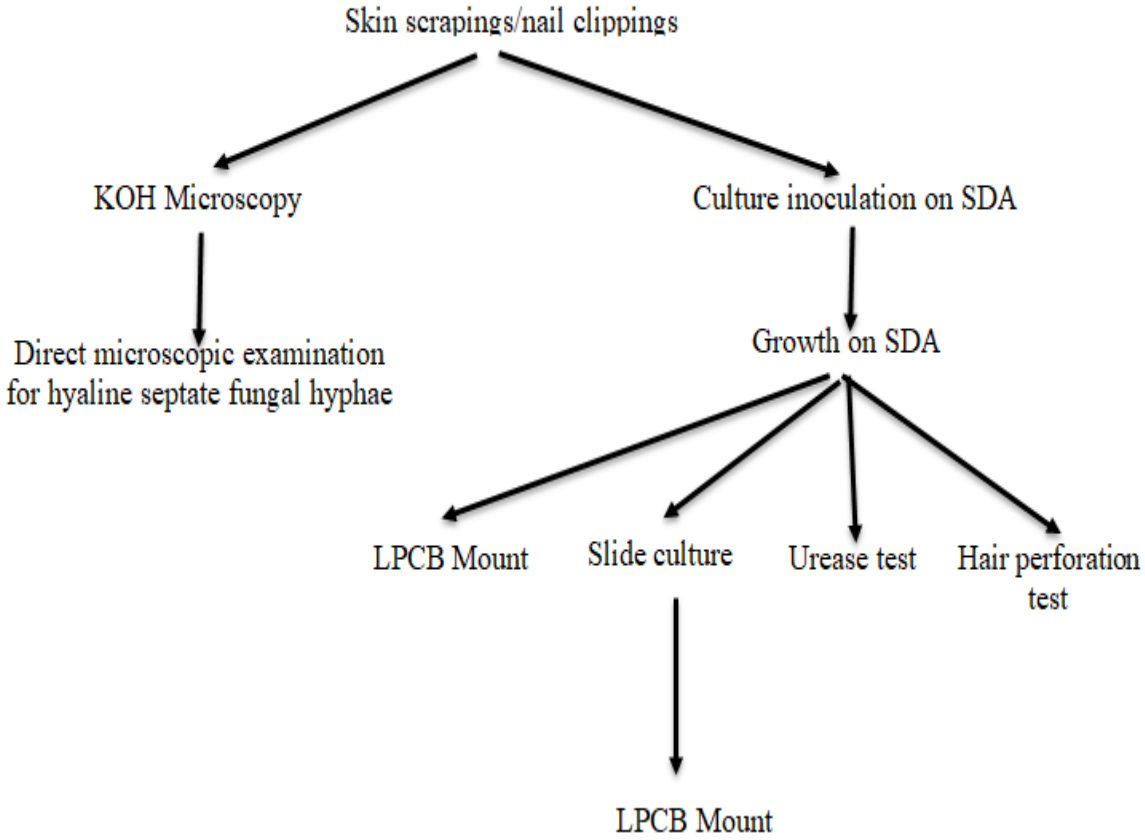

Chart 1:

Results

A total of 400 patients were included in the study. Among them, 290 (72.5%) were males and 110 (27.5%) were females. The patients were from 6-65 years of age and most of them were in the age groups of 30-60 years. Dermatophytic infection was positive in 184 (46%) patients which is depicted in figure number 1 below and most of them were males which is depicted in figure number 2. The predominant clinical manifestations was found to be Tinea corporis (65%)followed by Tinea cruris (20%), Tinea unguium (9%), Tinea faciei (6%) which is depicted in figure number 3.

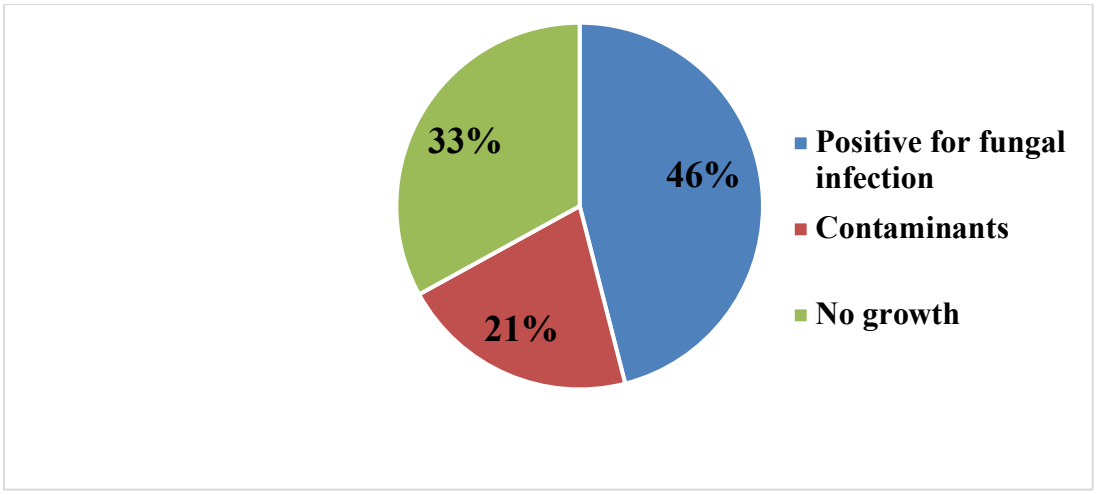

Figure 1: Percentage of Dermatophytic infection identified

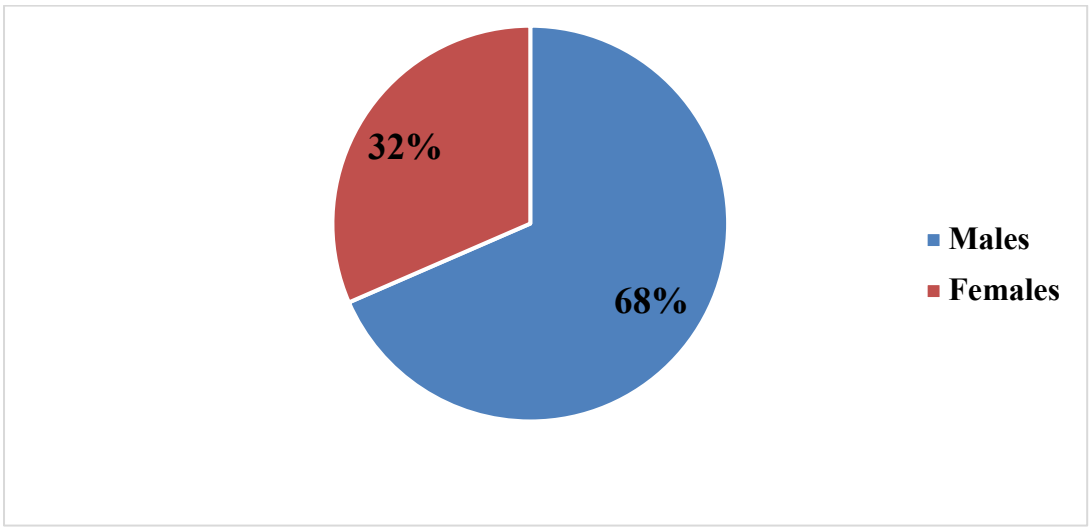

Figure 2: Gender wise distribution of patients

Distribution of clinical manifestation in culture positive patients

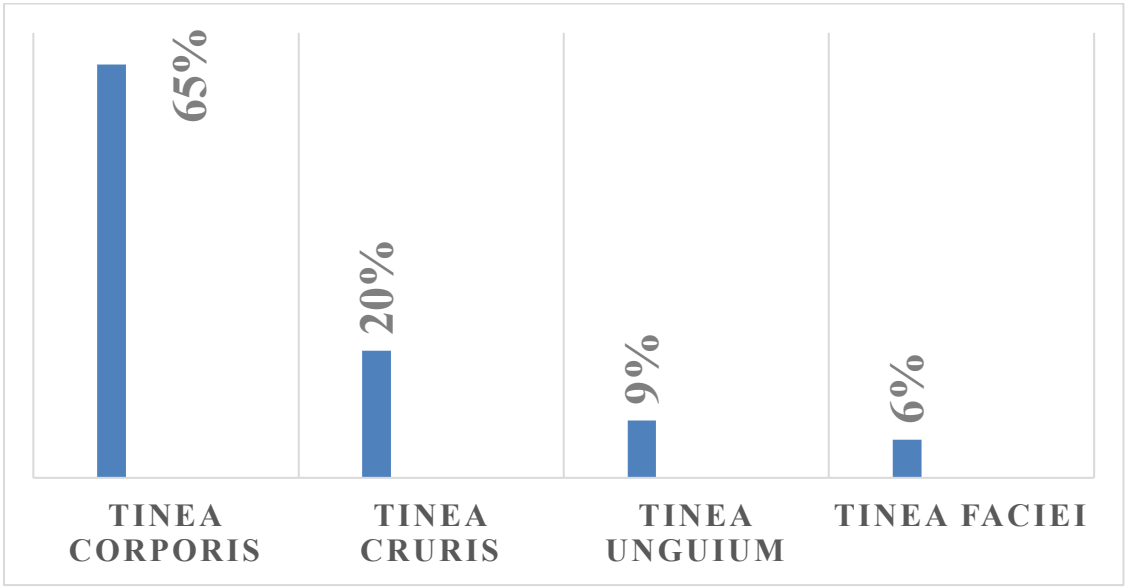

Figure 3: Clinical manifestation of Dermatophytosis

Major isolates were found to be Trichophyton spp followed by Microsporum spp. Among the Trichophyton spp, Trichophyton mentagrophytes was the predominant isolate followed by Trichophyton rubrum, Trichophyton schoenleinii. Among the Microsporum spp, Microsporum gypseum and Microsporum canis were isolated.

Figure number 4 and 5 shows fungal hyphae under KOH mount in 10X and 40 X respectively.

Figure number 6 shows Culture of Trichophyton mentagrophytes on SDA and figure number 7 shows grapes like clusters of microconidia of T. mentagrophytes, in LPCB mount under 40X.

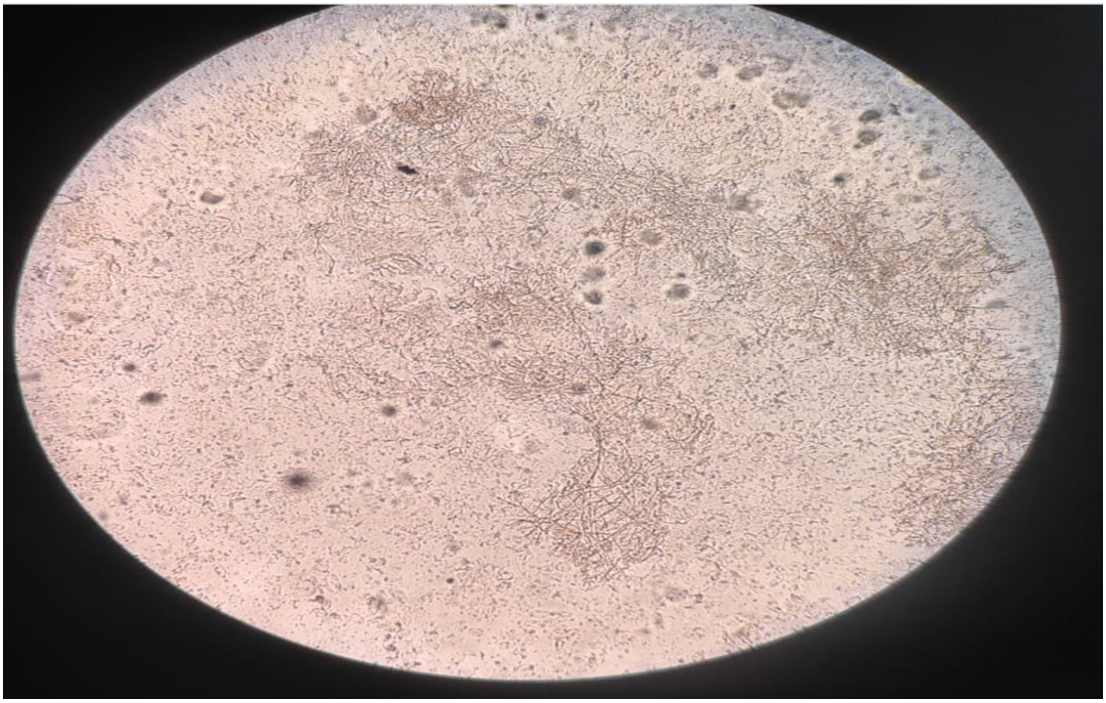

Figure 4: Fungal hyphae under KOH mount (10X)

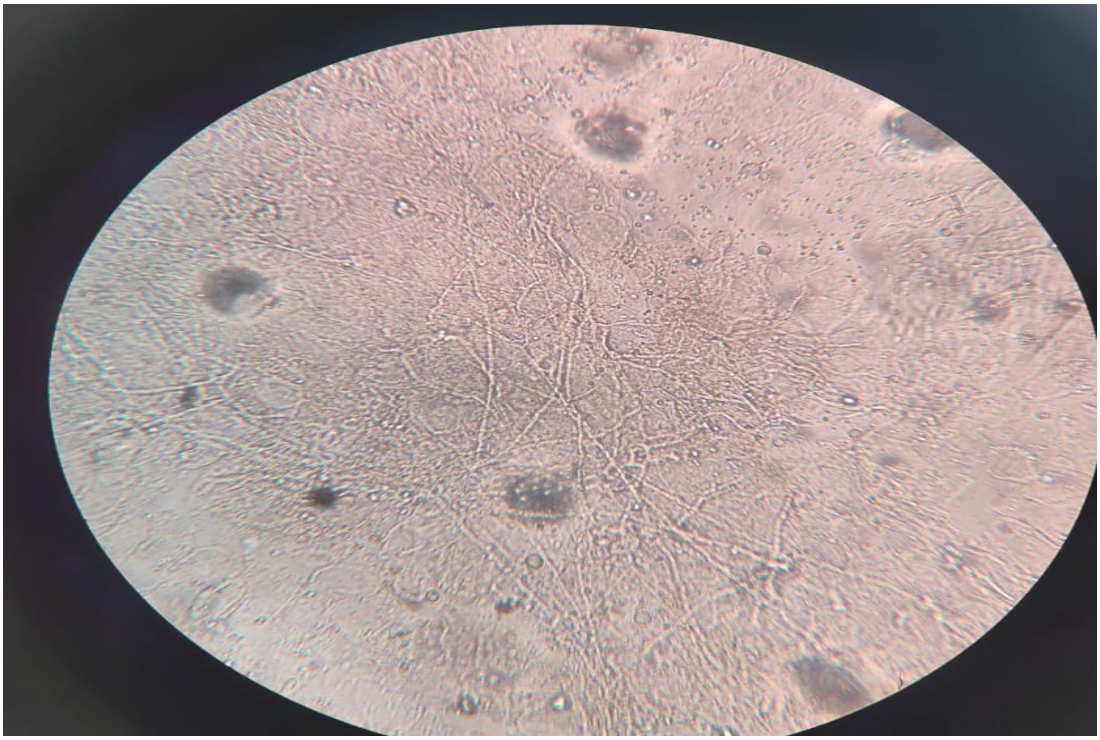

Figure 5: Fungal hyphae under KOH mount (40X)

Figure 6: Culture of Trichophyton mentagrophytes on SDA tube at 25ºC

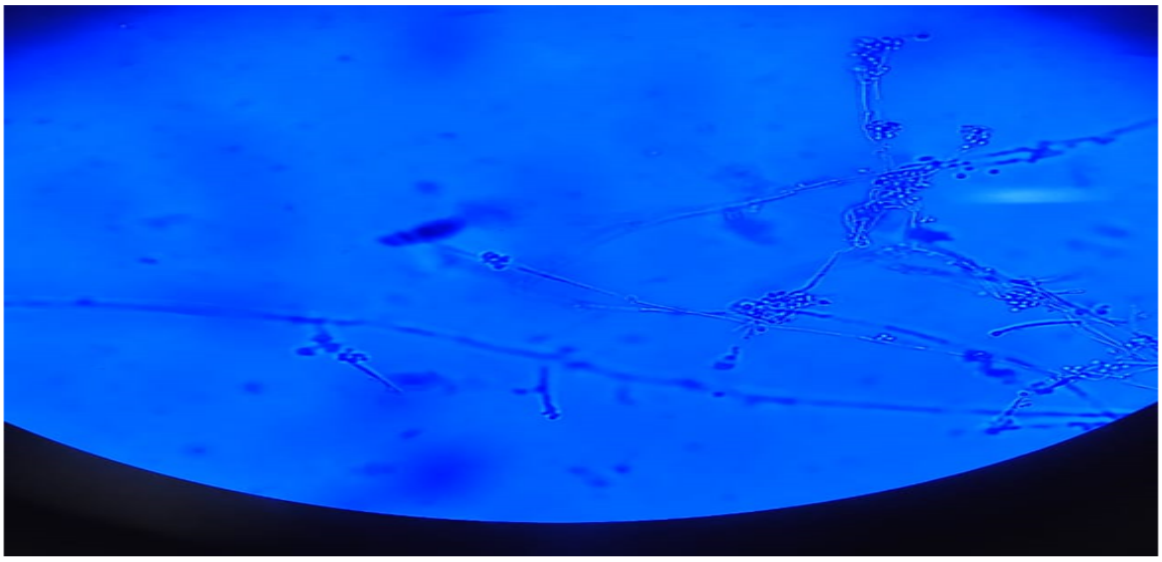

Figure 7: Grapes like clusters of microconidia of T. mentagrophytes, in LPCB mount under 40X

Discussion

The prevalence of Dermatophytosis varies with geographic region and weather. In this study, dermatophytic infection was found in 184 (46%) patients which is consistent with a study conducted by Teklebirhan G et al in 2015.[6] However, lower rate of this infection (28.4%) was reported from a study conducted by Alidawa M et al in 2021.[7] A high prevalence was found among males in this study. Higher incidence in males has also been reported in various other studies conducted in different parts of India.[8,9,10,11,12]

This can be attributed to the involvement of the males in physical labour and outdoor activities, often in the hot and humid environments leading to excessive sweating and wet body surfaces which favours fungal infections. This study also showed that persons of all age groups were susceptible to dermatophytosis but it was more common in adults of age group 30–60 years which is similar to a study conducted by Singh BS et al.[3]The predominant clinical manifestations was found to be Tinea corporis (65%)followed by Tinea cruris, Tinea unguium, Tinea faciei which is also consistent with some of the studies.[3] Trichophyton mentagrophytes was the most common isolate in the study which is similar to other studies conducted in various parts of the country [3,11,13,14] whereas a study conducted at Meghalaya showed Trichophyton rubrum to be the most common isolate.[15]

Conclusion

There is a wide geographical variation of dermtophytosis. The prevalence of dermatophytic

infections in this study is 46%. Tinea corporis is the dominant clinical manifestation involving 65% of the total cases and Trichophyton mentagrophytes is the most common isolate responsible for dermatophytosis. This data provides an assessment of the prevalence and mycological profile which would help in the estimation of the problem and hence in the prevention of spread of Dermatophytosis with adequate control measures. Moreover awareness of the preventive measures regarding public health and maintenance of personal hygiene would reduce the incidence of Dermatophytosis and hence the burden of this disease in the community as a whole. Further, antifungal susceptibility test should be done before starting the treatment therapy as recent literature shows emerging resistance against terbinafine.

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