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Original Research Article

Tinea: incidence during Magh Mela

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ABSTRACT

Background: Dermatophytosis refer to superficial fungal infection of keratinized tissues caused by keratinophilic dermatophytes. It is common in tropics and may present in epidemic proportions in areas with high rates of humidity.
Methods: The retrospective study was carried out from January 2018 to February 2018 at Allahabad. Gram stain, KOH examination and culture were carried out in 300 cases.
Results: Out of the 300 suspected cases authors identified, 263 cultures tested positive. The macroscopic examination of the scalp, skin and the nails of these 36 patients further revealed 50.20% Tinea corporis, 17.87% Tinea cruris, 11.02 % Tinea mannum, 8.74% Tinea pedis, 7.99% onychomycosis, 3.42% Tinea versicolor and 0.76% Tinea capitis. Culture examinations revealed 52.47% *Trychophyton mentagrophyte*, 34.98% *Trichyopyton rubrum*, 3.80% *Trychophyton violaceum*, 3.43% Malessesia, 2.28% *Scopulariopsis brevicaulis*, 1.52% *Trichophyton verrucosum*, 0.76% *Microsporum canis* and 0.76% *Epidermophyton flucossum*.
Conclusions: The study concludes that in a short period of Magh Mela authors got a large number of skin patients because of their belief that the holiness Ganga water will cure skin problems by itself. Some of the patients were found infected from the beginning and some gather infections during their stay in the mela period. Therefore, a prompt recognition of skin lesions and the identification of these superficial fungi are required for judicious management.

Keywords: Dermatophytes, Magh Mela, Superficial fungal infections, Tinea

INTRODUCTION

Dermatophytes are fungi that invade and multiply within keratinized tissues (skin, hair, and nails) causing infection.[1] Based upon their genera, dermatophytes can be classified into three groups: Trichophyton, epidermophyton and microsporum. Based upon the affected site, these have been classified clinically into tinea capitis, tinea faciei, tinea barbae, tinea corporis, tinea manus, tinea cruris, tinea pedis, and tinea unguium. Other clinical variants include Tinea imbricata, Tinea pseudoimbricata, and Majocchi granuloma.

They are the most common agents of superficial fungal infections worldwide and widespread in the developing countries, especially in the tropical and subtropical countries like India, where the environmental temperature and relative humidity are high. Other factors such as increased urbanization including the use of occlusive footwear and tight fashioned clothes, has been linked to higher prevalence.[2] Over the last few years, studies on epidemiology of dermatophytic infection from different part of India have shown a rising trend in the prevalence of cutaneous dermatophytosis with change in spectrum of infection and isolation of some uncommon species.[3-6]

Therefore the objective of the study is to determine the incidence of tinea infection during Magh Mela.

METHODS

This retrospective study included 300 suspected cases of fungal infections that were staying on the banks of Ganga for offering their prayers for a very short period of one month at Allahabad during Magh Mela on their firm faith and belief that holy Ganga water has great therapeutic role in skin diseases. Dermatological evaluation and confirmation of the presenting lesions were done by the dermatologist. In all cases, data related to the age, sex, duration of the lesions, occupation, personal habits etc was noted. After a detailed clinical examination, the physical features of the scalp, skin and nails were recorded. A lot of care was particularly taken to record the past history of superficial mycotic infections also.

Before obtaining a specimen, the infected areas were cleansed by swabbing them liberally with alcohol to eliminate as many bacteria as possible, because they can overgrow and inhibit the growth of dermatophytes. Scrapings and clippings were collected from the diseased portions of the scalp, skin and nails. When both the skin and the nails were affected, specimens were collected from both the sites.

Each specimen was divided into two parts; one was taken for direct microscopic examination after 10% KOH solution treatment and the second was inoculated on sabouraud dextrose agar (M286) and sabouraud cycloheximide chloramphenicol agar (M664). Two successive cultures were performed to establish the colonization of the pathogen because successive sampling rarely demonstrates the same contaminant. Cultures were routinely incubated at 25–30° C and examined daily for up to 4 weeks. The identification of the individual fungi was based on standard methods such as microscopy, morphology, colonial characterization and pigment production, rate of growth and biochemical test.[7-8]

RESULTS

A total of 300 clinically suspected cases of superficial fungal infections were undertaken for mycological studies during the period spanning from Jan 2018 to Feb 2018 at present centre. The base line and the demographic data of all 263 patients are summarized (Table 1).

Table 1: Demographic features.

Demographic features:	
Age	59.19±9.099
Gender	Female 73.1%, Male 26.9%
Diabetes	54.7%
Old Age	29.3%
Immunosuppression	13.3%
Unknown	2.7%

Out of a total of 300 suspected cases of superficial mycosis, 263 cases were culture positive; the rest 37 cases did not show any fungal growth on culture media after an incubation period of 4 weeks hence they were considered as negative. The spectrum of lesions and spectrum of fungal isolates of the culture positive cases are depicted in Figure 1 and Figure 2 respectively. For the 263 culture positive patients the predominant clinical abnormality observed was Tinea corporis (50.20%) and the prevalent fungal isolate was Trichophyton mentagrophyte (52.47%). The duration of the lesions varied from one month to 4 years, but a majority of these cases were of less than two-months duration.

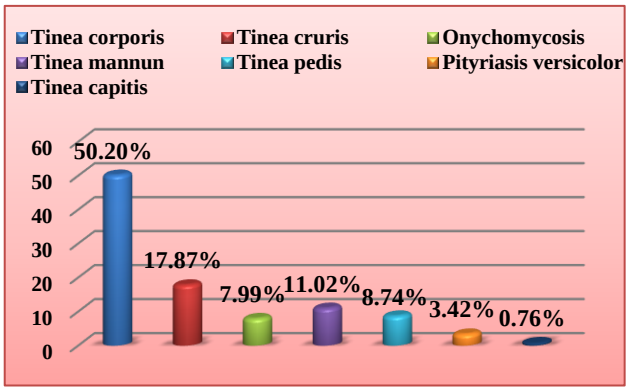

Figure 1: Spectrum of superficial infections.

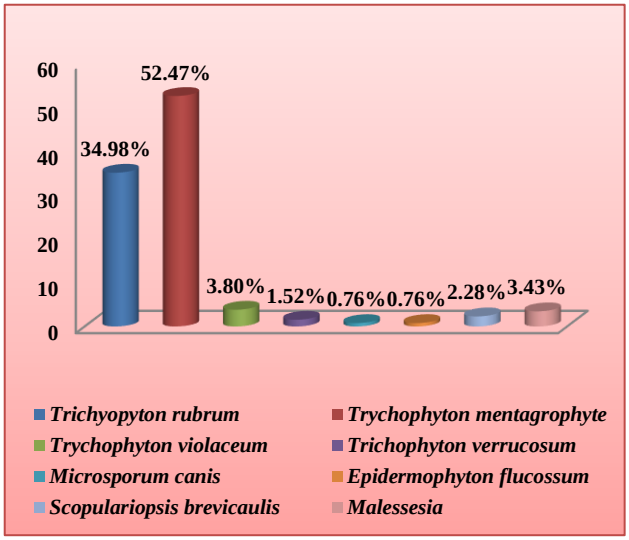

Figure 2: Spectrum of fungal isolates in patients.

The macroscopic examination of the scalp, skin and the nails of these 263 patients further revealed 50.20% Tinea corporis, 17.87% Tinea cruris, 11.02 % Tinea mannum, 8.74% Tinea pedis, 7.99% onychomycosis, 3.42% Tinea versicolor and 0.76% Tinea capitis. Culture examinations revealed 52.47% *Trychophyton mentagrophyte*, 34.98% *Trichyopyton rubrum*, 3.80% *Trychophyton violaceum*, 3.43% Malessesia, 2.28% *Scopulariopsis brevicaulis*, 1.52% *Trichophyton verrucosum*, 0.76% *Microsporum canis* and 0.76% *Epidermophyton flucossum*.

As for the remaining 37 culture negative cases, the macroscopic examination of the scalp, skin and the nails revealed 7.1% Tinea capitis, 11.4% Tinea versicolor, 15.8% Tinea corporis, 8.7% Tinea mannum, 5.3% onychomycosis, 17.5% Tinea cruris and 34.2% Tinea pedis.

DISCUSSION

All people are not equally susceptible to fungal infection, even when they have similar risk factors. There is evidence of familial or genetic predispositions that could be mediated by specific defects in innate and adaptive immunity. One of the first fungal diseases thought to have a genetic predisposition was Tokelau or tinea imbricata. According to Jaradat et al., patients with low defensin beta 4 may be predisposed to all dermatophytes.[9]

Out of a total of 300 suspected cases of superficial mycosis, 263 cases were culture positive; the rest 37 cases did not show any fungal growth on culture media after an incubation period of 4 weeks. The possible reasons for a negative fungus culture might be the following: the presence of non-viable hyphae elements in the distal region of the diseased nail and in the margins of the skin lesions, an uneven colonization of lesion with the fungus and an antifungal treatment had been used prior to the collection of the specimen. Low culture positivity rate was also reported in previous studies, in 2004 and 2005, the MRL received 5312 and 5137 dermatology specimens, respectively, of which 2321 (45%) and 2277 (43%) were positive by direct microscopy, 1538 (30%) and 1553 (29%) were positive by culture and 1430 (28%) and 1415 (27%) were positive by both microscopy and culture.[10]

The macroscopic examination of the scalp, skin and the nails of these 36 patients further revealed 50.20% Tinea corporis, 17.87% Tinea cruris, 11.02 % Tinea mannum, 8.74% Tinea pedis, 7.99% onychomycosis, 3.42% Tinea versicolor and 0.76% Tinea capitis. Culture examinations revealed 52.47% *Trychophyton mentagrophyte*, 34.98% *Trichyopyton rubrum*, 3.80% *Trychophyton violaceum*, 3.43% Malessesia, 2.28% *Scopulariopsis brevicaulis*, 1.52% *Trichophyton verrucosum*, 0.76% *Microsporum canis* and 0.76% *Epidermophyton flucossum*.

The pathogenesis of dermatophyte infection involves complex interaction between the host, agent and the environment. The factors which predispose to such an infection are underlying diseases such as diabetes mellitus, lymphomas, immunocompromised status, or Cushing's syndrome, older age, which could produce severe, widespread, or recalcitrant dermatophytosis. Some areas of the body are more susceptible to the development of dermatophyte infections such as intertriginous areas (web spaces and groins) where excess sweating, maceration, and alkaline pH favour the growth of the fungus. After inoculation into the host skin, suitable condition favour the infection to progress through adherence followed by penetration mediated by proteases, serine-subtilisins, and fungolysin, which causes digestion of keratin network into oligopeptide or amino acid and also act as a potent immunogenic stimulus.[11] In addition, the mannans produced by T. rubrum lead to inhibition of lymphocytes. Impaired function of Th17 cells leading decreased production of interleukin-17 (IL-17), IL-22 (key cytokine in clearing mucocutaneous fungal infection) results in persistence of infection.[11]

Fashion trends are changing, and tight-fitting clothing such as figure hugging denims, leggings, and jeggings are increasingly preferred by youngsters who do not pay heed to practical aspects like their non-suitability to our hot and humid climate. This could explain the increased prevalence of tinea cruris and tinea corporis not only in overweight but also in otherwise hygiene conscious, young, slim women with no other risk factors. A large number of women present with a sub mammary location of the infection that involves the inframammary fold more than the skin of the breasts. This underscores the role of friction and maceration resulting from moisture of perspiration.[12] In our observational study we also find 73.1% females suffering from tinea infections.

In the recent years, there seems to be an epidemiological transformation of dermatophytes in India. Many studies done across India have found T. rubrum, to be the most common organism while recent mycological studies undertaken have demonstrated T. mentagrophytes to be the predominant causative organism.[13,14] This organism has been found to exhibit a rapid growth in the primary culture within 5-7 days.[12] This change may be responsible for the widespread and inflammatory lesions that T. mentagrophytes is associated with. This change also affects the way we view the role of fomites in transmission of tinea. In an interesting study, T. rubrum survived for<12 weeks on a towel while T. mentagrophytes survived for>25 weeks on towels. This fact highlights the importance of disinfection of clothes which could be best done by washing in hot water at 60° C and drying in sunlight, as sunlight is considered to be the most effective disinfectant for dermatophytes.[15] Probably this explains the high incidence of T. mentagrophyte (52.47%) during Magh Mela.

CONCLUSION

The study concludes that in a short period of Magh Mela we got a large number of skin patients because of their belief that the holiness Ganga water will cure skin problems by itself. Some of the patients were found infected from the beginning and some gather infections during their stay in the mela period. Therefore, a prompt recognition of skin lesions and the identification of these superficial fungi are required for judicious management.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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