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Original Research Article

Study of the prevalence of the superficial fungal infections of the skin

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Abstract: Superficial mycoses able to spread readily though direct contact with infected people, animals, clothing, brushes, and other objects. Generally, the fungi tend to grow in moist parts of the body. The present study was done to study the prevalence of the superficial fungal infection of the skin. This study was undertaken on the patients visiting to the dermatology department of the SMBT medical college, Dhamangaon, Ghoti, Nasik, with any type of skin lesions. The study was done over a period of 1 year. A detailed case history of patient was recorded, including age, sex, duration of illness, size of the lesion, any treatment taken and site of lesion. Clinical diagnosis of the lesion was maintained. Two sample collection methods were used in this particular study: In first method, after cleaning of the affected site with isopropyl alcohol, samples consisting of infected hairs and epidermal scales were scraped from the scalp and rim of lesions using a sterile scalpel blade. The scrapings were collected on a piece of sterile brown paper. In the second method, moist cotton swabs were taken to collect pus from inflammatory lesions. Direct microscopic examination of the scrapping was done by placing on a microscope slide with one or two drop of 20% potassium hydroxide (KOH). Each scraping was also cultured into Sabouraud's Dextrose agar. Total 139 patients were reported to the dermatology department with the complaint of skin lesion and their samples were collected. According to the positivity to the KOH mounting, most of the males (63%) were positive for the KOH and females (11%) were less positive for the KOH. Site-wise distribution of the patients had shown that, hands and legs were the most common site affected. In case of age-wise distribution of the patients, 31 to 45 years age group was the most commonly affected. Skin fungal infections are widely prevalent among the population and there is need to increase the awareness of risk factors contributing to skin fungal infections.
Keywords: Fungal infections, Mycosis, Skin lesions

INTRODUCTION

Superficial cutaneous fungal infections are limited to the epidermis, as opposed to systemic fungal infections (i.e. endemic mycoses and opportunistic infections).

Superficial infections can be caused by three groups of cutaneous fungi: dermatophytes, Malasseziaspp., and Candida spp [1,2].

Dermatophytes: Include Trichophytonspp., Microsporumspp., and Epidermophytonspp. It infect keratinized tissues: the stratum corneum (outermost epidermal layer), the nail or the hair.

Because fungal infections are frequently under-recognized and difficult to detect, one of the largest gaps in our understanding of their epidemiology is determining the incidence of disease [1, 3].

The present study was done to study the prevalence of the superficial fungal infection of the skin.

MATERIALS AND METHODS

This study was undertaken on the patients visiting to the dermatology department of the SMBT medical college, Dhamangaon, Ghoti, Nasik, with any type of skin lesions. The study was done over a period of 1 year. A detailed case history of patient was recorded, including age, sex, duration of illness, size of the lesion, any treatment taken and site of lesion. Clinical diagnosis of the lesion was maintained.

Sample collection

Two sample collection methods were used in this particular study: In first method, after cleaning of the affected site with isopropyl alcohol, samples consisting of infected hairs and epidermal scales were scraped from the scalp and rim of lesions using a sterile scalpel blade. The scrapings were collected on a piece of sterile brown paper.

In the second method, moist cotton swabs were taken to collect pus from inflammatory lesions.

The obtained samples were grouped into two portions: one for microscopic examination and one for culture. The collected samples were transported to the laboratory within 2 hours for microscopic and cultural analysis [5].

Sample processing

Direct microscopic examination

Direct microscopic examination of the scrapping was done by placing on a microscope slide with one or two drop of 20% potassium hydroxide (KOH) and a cover slip was placed. The sample was then warmed for 5 minutes over a flame. Each treated slide was then examined under low and high power microscope objective for the presence of fungal hyphae and/or arthroconidia.

Fungal culture

Each scraping was also cultured into Sabouraud's Dextrose agar. The plates were incubated then at 28°C for up to 4 weeks. The culture plates then examined at 2 to 3 day intervals for fungal growth. The isolates examined visually and microscopically for morphology of fungi using lacto phenol cotton blue test by slide culture technique. The dermatophytes species were identified by gross and microscopic morphology and by in-vitro tests.

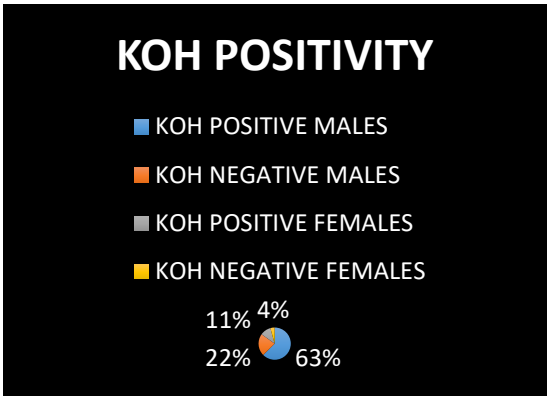
RESULTS

Total 139 patients were reported to the dermatology department with the complaint of skin lesion and their samples were collected.

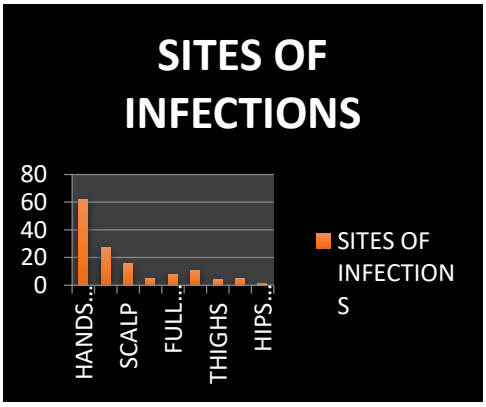
According to the positivity to the KOH mounting, most of the males (63%) were positive for the KOH and females (11%) were less positive for the KOH. (Graph 1)

Site-wise distribution of the patients had shown that, hands and legs were the most common site affected followed by groin, scalp and nails regions. (Graph 2)

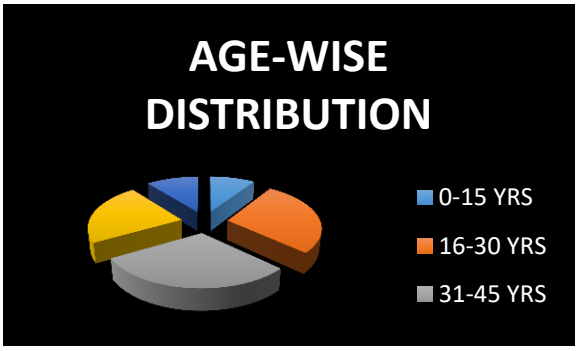
In case of age-wise distribution of the patients, 31 to 45 years age group was the most commonly affected followed by the 16 to 30 years and 46 to 60 years. (Graph 3)



Graph-1: KOH positivity



Graph-2: Site wise distribution of fungal infections



Graph-3: Age-wise distribution of fungal infections

DISCUSSION

Fungi are everywhere and no geographical area or any group of people is spared by this Organism [2]. Reports of human infections with environmental fungi are on the increase throughout the world. Many of these reports describe infections caused by new agents, as well as by traditional agents with new virulence factors or new mechanisms of infection. Fungal infections historically have been under-recognized and difficult to detect, and treatment options are poor [1].

Fungi are a group of non-photosynthetic micro-organisms which live as saprophytes in the soil and on dead organic matter or as parasites of plants and animals including man. They can be found in the soil, decaying plants, air and water, and as part of the microbial flora of within the body or on the skin of man. There are many species of fungi that causes skin infections in man [3, 4]. However, the level of understanding of the risk factors for skin infection is poor, leading to late detection of symptoms by doctors or pharmacists. This level of understanding may have special relevance where awareness is of concern [5, 6].

These infections have been reported in various studies in developing countries as the most common dermatoses and where they are not; they are usually the second most common skin problems. They are also responsible for most of the skin infections among school children. In a study of schoolchildren by Amoran et al, 83.7% of all skin disorders seen in 480 pupils were infective dermatoses with superficial fungal infections (dermatophytoses and pityriasis versicolor) constituting 74.1% [3, 7].

Skin fungal infection is not a reportable disease, but it is a cause for concern because of its contagious nature. The variation in the epidemiology of the infection is dependent on the people's habits, standards of hygiene, climatic conditions, and levels of education [1, 8].

Skin infection due to dermatophytes has become a significant health problem affecting children, adolescents and adults. Mycetoma caused by filamentous fungi (Eumycotic mycetoma) and filamentous bacteria (Actinomycotic mycetoma) need to be differentiated by culture studies. A correct diagnosis is important to initiate appropriate treatment and also essential for epidemiological purposes. In the background of immunosuppression, detection of these agents becomes mandatory for the effective management of mycoses to prevent further invasions [9, 10].

CONCLUSION

Skin fungal infections are widely prevalent among the population and there is need to increase the awareness of risk factors contributing to skin fungal infections.

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