

Prevalence of tinea corporis and tinea cruris in Chitradurga rural population

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Abstract

Introduction: Globally, the prevalence of superficial fungal skin infection is 20–25%. Dermatophytes are the most common agents. In general population, tinea corporis and tinea cruris infections are very common. The present study is to find the prevalence of tinea corporis and tinea cruris in Chitradurga rural population.

Materials and Methods: This is a prospective observational study, conducted at Dermatology Department of Dermatology, Basaveshwara Medical College and Hospital, Chitradurga. A total of 200 patients showing lesions typical of dermatophytes infection were included in this study. Among 200 patients, 107 patients had tinea corporis, 50 patients had tinea cruris, 7 patients had tinea facia and 36 patients had other fungal infections. A detailed clinical history was taken from study subjects.

Result: In the present study, 200 patients were included in the study. Among them 107 patients were diagnosed as tinea corporis (53.5%) and 50 patients had tinea cruris (25%) infection. Out of 107 tinea corporis patients 76 (71%) were males and 31 (29%) were females. Out of 50 tinea cruris patients 35 (70%) were males and 15 (30%) were females. Tinea facia is diagnosed in 7 patients and 36 patients had other fungal infections. Tinea corporis is more prevalent in males than females.

Conclusion: Dermatophytosis, a common condition, especially tinea corporis and tinea cruris is public health problem affecting all age groups in our area. It is found that the prevalence of tinea corporis (53.5%) is more in this population and the prevalence of tinea corporis is high in males (71%) and in 21-30 years of age group. Use of non-occlusive absorbent cotton garments and good hygiene prevent this ring worm infection.

Keywords: Dermatophytes, Fungal Infections, Prevalence, Superficial fungal infections.

Introduction

Globally, the prevalence of superficial fungal skin infection is 20–25%, dermatophytes are the most common agents to cause fungal infections and it is quite common.^{1,2} The prevalence of this infection is very high in the tropical countries.^{3,4} This fungal infection is prevalent in all age groups of both sexes in our country.⁵

The Dermatophytes are a group of closely related fungi that invade the keratinized tissue (skin, hair, and nail) of humans and other animals to cause an infection, known as dermatophytosis, referred to as “Ringworm” due to the appearance of the lesion or “Tinea”. These species are of three types geophilic, zoophilic, or anthropophilic based on whether they predominantly reside in the soil, on animals, or on humans, respectively.³ Infection caused by dermatophytes is generally cutaneous and restricted to the nonliving cornified layers because the fungi is not able to penetrate the deeper tissues or organs of immunocompetent hosts. The infection spreads very easily by direct contact from infected humans and animals or through fomites.⁵

In humans, Dermatophytes manifest in different forms. Trichophyton species are the common agents to cause Tinea corporis and Tinea cruris infections. Trichophyton species disrupts keratin in the stratum corneum (epidermis of skin). This is because the dermatophyte group of fungi are not able to penetrate

tissues which are not fully keratinized. However, the severity of dermatophyte infection varies from mild to moderate according to host immunity, virulence of the infecting species, site of infection and environmental factors.⁶

Worldwide, the incidence and distribution of these fungal infections varies significantly as the prevalence of different species varies with geographic regions, local cultural practices, climate and socioeconomic conditions. Overcrowding, areas with high humidity, poor hygienic conditions are the main factors, which predispose dermatophytosis.⁷

Dermatophyte infection of the glabrous skin of the trunk, shoulders and limbs (except scalp, groin, soles and palms) termed as tinea corporis and can be caused by Trichophyton species. It is the most common dermatophyte infection in India and abroad.^{4,6}

In world, Trichophyton rubrum is the quite common infectious agent. 47% cases of Tinea corporis are caused by Trichophyton rubrum. It starts as a flat, scaly and more often as a pruritic macules which may further develop into a lesion with raised border spreading radially with erythematous vesicular edges. This may expand as a ring with central clearance and irregular circles giving this infection a layman name “ring worm”. Tinea corporis occurs globally, and is relatively frequent, but its higher incidences are seen in tropics and subtropics. In India, tinea corporis is accountable for up to 88% of cases. Infection can occur

from direct or indirect contact with skin and scalp lesions of infected persons or animals.⁶

Tinea cruris, another variety of superficial fungal infection, caused by *Trichophyton rubrum*, *Epidermophyton floccosum* which manifest as an inflammatory lesion or asymptomatic, (depends on species virulence and patient's immune response) most commonly in the groin and genital area (perianal and perineal sites) with a tendency to use keratin as its nitrogen source for growth. Lesions are erythematous and covered with thin, dry scales, can extend to inner thigh with raised, defined border with small vesicles.^{8,9}

The diagnosis of tinea corporis is mainly clinical findings and occasionally laboratory investigations are also required such as direct microscopy of the specimen in 10% KOH solution and fungal culture in Sabouraud's dextrose agar (SDS) medium. In Indian, there are various reports regarding the prevalence of the Dermatophyte infection. Although the dermatophyte infection is not invasive and easy to cure, its widespread nature and cost of the treatment is a major public health problem and burdens the economic status of the tropical countries like India. Few studies reported on the prevalence of the dermatophyte infections in Karnataka, India. Hence, the present study is to find the prevalence of tinea corporis and tinea cruris among different age groups in Chitradurga rural population.

Materials and Methods

This study is a prospective observational study, conducted at Outpatient Department of Dermatology, Venereology and Leprology, Basaveshwara Medical College and Hospital, Chitradurga. After obtaining the Institutional Ethical Clearance and informed consent, a total number of 200 subjects were included in the study. Patients with complaint of itching or lesion were screened. Tinea corporis and tinea cruris were diagnosed clinically in terms of patient's history and clinical examination.¹⁰

A detailed clinical history was taken and physical examination done in all the study subjects. It included age, sex, site of infection, duration of disease, history of similar illness in family, socioeconomic status, occupation, history of recurrence, lifestyle and history of associated diseases were elicited and recorded in proforma. Patients those who had undertaken any topical or systemic antifungal treatment and non-dermatophyte infections in the past 2 months at the time of presentation were excluded from the study.

To avoid a misdiagnosis, identification of dermatophyte infections from skin scraping is suggestible. Hence, the patient was taken to mycological unit of Microbiology department. Microscopic examination, consisting of a 10% to 15% KOH preparation, from skin scrapings from peripheral margins and roof of the blister using small scalpel blade, dermatophytes are easily recognized under microscope by their long branch like tubular structures called HYPHAE and it was taken as confirmatory test.

Results

In this study, Out of 200 patients, 107 patients had tinea corporis (53.5%) infection and 50 had tinea cruris (25%) infection. The initial diagnosis is done by clinically and after that mycological confirmation of presence of hyphae in KOH mounts under microscopy. Out of 107 tinea corporis patients 76 were males (71%) and 31 were females (29%) and 90 patients were KOH positive whereas 17 patients were KOH negative. The prevalence of tinea corporis is more in males compared to females. Out of 50 tinea cruris (25%) patients, 35 were males (70%) and 15 were females (30%) and 35 patients were KOH positive whereas 15 patients were KOH negative. Tinea Facia is observed in 7 patients and other fungal infections were observed in 36 patients. (Table 1, Fig. 1 and 2)

Table 1: Details of patients with reference to sex and clinical manifestations

Clinical Manifestation	Total number of subjects (n=200)	Sex	
		Male	Female
Tinea Corporis	107 (53.5%)	76 (71%)	31 (29%)
Tinea Cruris	50 (25%)	35 (70%)	15 (30%)
Tinea Facia	7 (3.5%)	5 (71.4%)	2 (28.5%)
Other fungal infections	36 (18%)	21 (58.3%)	15 (41.6%)

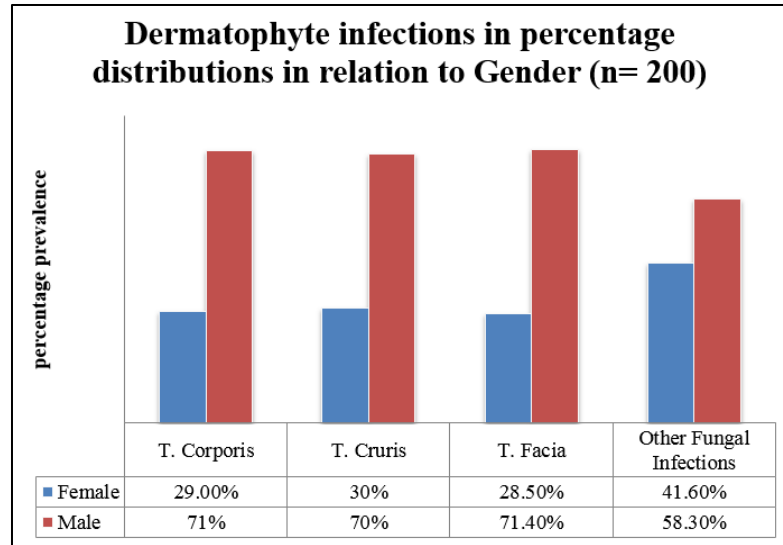


Fig. 1: Gender wise percentage distribution of dermatophyte

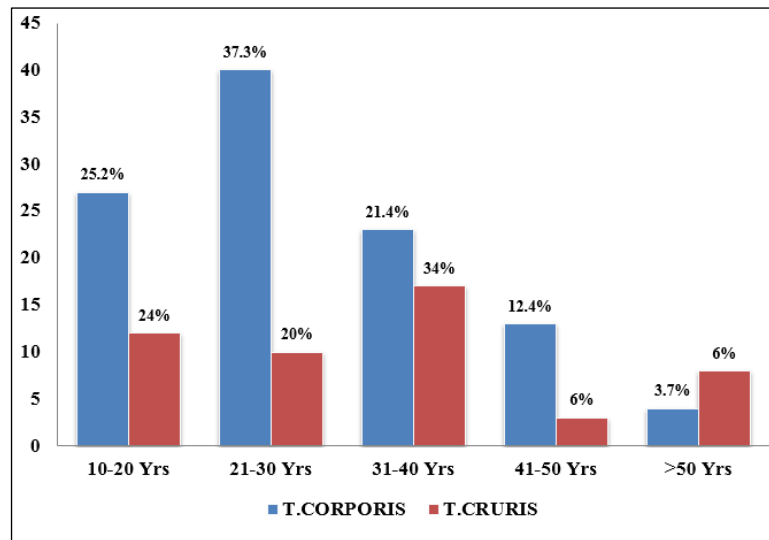


Fig. 2: Age wise distribution of T. corporis and T. cruris

Discussion

Studies have shown that high occurrence of dermatophytoses from different parts of the world.¹¹ Globally, Dermatophyte infections are very common. Epidemiological features vary according to the geographical area as a consequence of migratory streams, lifestyle and socioeconomic conditions, and incidence of peculiar comorbidities.¹² In recent decades, studies showed a growing etiological role of some anthropophilic dermatophytes has become evident all over the world. All races are usually affected and the clinical varieties and prevalence appear to depend mainly on environmental factors.¹³

India is a tropical country and it's climate is conducive for dermatophytosis. Finding the prevalence of Dermatophyte infections and their various clinical presentations helps in the early diagnosis and proper treatment of Dermatophytosis.¹⁴

In this study, 200 clinically diagnosed dermatophytoses cases were studied. Studies have reported that males are more frequently affected by dermatophytes infection compared to females⁵. In the present study, out of 200 patients, 137 (68.5%) were males, which is higher than the females, 63 (31.5%). The prevalence of T. corporis and T. cruris is more in males, 71% and 70% respectively. In males, the increased percentage may be due to increased outdoor exposure and more physical work, results in increased sweating and less cosmetic consciousness compared to females.³ In females, the lower incidence could also be due to non-reporting of females. Out of 200 patients, the highest prevalent dermatophyte infection was T. corporis (53.5%), followed by T. cruris (25%), T. capitis (3.5%) and other fungal infections (18%).

The study results showed that the prevalence of T. corporis infection is high in the adult age group (21 - 30 years) and T. cruris in the age group of 31-40. The highest prevalence of this dermatophyte infection in

this age group may be due to increased physical activity and this leads to excessive sweating which is more favorable for the dermatophytes growth. This study finding are supported by earlier studies.¹⁵⁻¹⁸

The present study results are comparable with the earlier study reports from Tamil Nadu, Madhya Pradesh, Manipal and Kashmir.¹⁹⁻²¹ Apart from India, in Brazil the prevalence of tinea corporis is reported to be most predominant clinical type.²²⁻²³ In men, tinea cruris is more prevalent compared to women. This findings were supported by earlier studies.²⁴

The main reason behind the high prevalence of above mentioned groups i.e., tinea corporis and tinea cruris is the severe itching which induces the patient to seek medical advice.¹³ This is in agreement with majority of all cases of recurrent disease and extensive disease. Our study results are in accordance with studies done by.²⁵⁻²⁸ Dermatophytosis is mainly due to less aeration due to tight clothing, increased humidity and temperature of the body which makes skin as a suitable growth environment for dermatophytes, maceration, and sweating in groin and waist region.²⁸ These conditions are shown to be associated with the incidence of tinea corporis and tinea cruris.^{26,18} The main limitations of our study is culture and sensitivity assays and details about other fungal infections. Further studies are recommended to find out the prevalence of other fungal infections in this population.

Conclusion

From the present study, it may be concluded that in tropical countries like India, Dermatophytosis is a common fungal infection, affecting all age groups in our area. This study, found that the tinea corporis is more prevalent than tinea cruris. Prevalence of tinea corporis is more in males and in 21-30 years of age group. Use of non-occlusive absorbent cotton garments and good hygiene prevent this ring worm infection. Patients need to be educated regarding the continuation of medications until mycological cure in order to prevent recurrence and also about the hygienic measures.

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Conflict of Interest: Nil

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