

A Clinical and Epidemiological Study of Pityriasis Versicolor

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Abstract

Background: Pityriasis versicolor is a common, benign, chronic superficial skin infection caused by *Malassezia furfur* seen in all age groups. The data of prevalence and risk factors vary from place to place. An attempt is made to describe both clinical and epidemiological features in northern Kerala.

Aim of the Study: To study the clinical features, prevalence and demographic data of the patients with pityriasis versicolor in a tertiary teaching hospital.

Materials and Methods: A total of 187 patients attending the outpatient Department of Dermatology were included. Their demographic data, clinical features were collected and analyzed. The demographic details included age, sex, occupation, symptoms, duration, history of recurrence, animal contact, associated dandruff, family history, and use of shampoo and oiling the body.

Observations and Results: A total of 187 patients included in the study; 109 were males and the remaining 78 were females with a male to female ratio of 1.39:1. 20–40 years age group was most frequently affected with 42.24% patients. The overall mean age was 31.65 ± 5.25 . Comorbid diseases were noted in 34/187 (18.18%) of the patients in this study. Among them, 12/34 were having diabetes mellitus (35.29%) and renal disorders in 08/34 (23.52%).

Conclusions: Pityriasis versicolor is a common skin disease seen in dermatology practice of any geographic area. The most common age group affected by pityriasis versicolor was 20–40 years. Male gender was commonly affected. There was no significant relationship between the prevalence and the age, gender, profession, personal hygiene, family history, and personal hygiene. Peak incidence of pityriasis versicolor was observed in April to July months. Chest was the most common site of presentation of lesions followed by abdomen and neck. Hypo-pigmented lesions were more common. Comorbid diseases were associated in 18.18% of the total patients.

Key words: Dermatophytosis, Fungal, *Malassezia furfur*, Pityriasis versicolor, Tinea versicolor, Yeast

INTRODUCTION

Pityriasis versicolor is a mild, chronic superficial infection of the stratum corneum layer of the skin caused by *Malassezia furfur* and/or other species of *Malassezia*.^[1] The genus *Malassezia* is part of the normal skin microflora, and it needs predisposing factors for multiplication and subsequent conversion from the commensal yeast form

to the mycelial phase (pseudo-filamentous parasitic form).^[2] The lesions are characterized by discrete, serpentine, hyper or hypo-pigmented maculae developing on the skin; usually on the chest, upper back, arms, and abdomen. These lesions may enlarge and coalesce, but scaling, inflammation and irritation are minimal as the host response is minimal.^[3,4] The organism *M. furfur* is lipophilic yeast/fungus which requires lipid in the medium for growth. The clinical diagnosis can be confirmed by direct microscopic examination of scraping of infected skin treated with 10% potassium hydroxide (KOH) or stained with lactophenol cotton blue stain. Short branched hyphae and spherical cells are observed.^[5] Microscopic visualization of the fungi appears as short, thick hyphae with a large number of variously sized spores (spaghetti and meatball appearance).^[6] This cutaneous infection has a worldwide

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distribution, especially in tropical areas. Infection by pityriasis versicolor usually infects adults due to increase sebum secretion after puberty.^[7] A prevalence of 30–40% has been reported in tropical areas worldwide.^[8] The risk factors described are warm season, profuse sweating, malnutrition, Cushing's disease, pregnancy, and the use of oral contraceptive pills.^[9] The cosmetic effect of hypo-pigmented patches on the skin brings the patient to the dermatologist for a consultation.^[10] When the infection affects the scalp known as pityriasis capitis presents as dandruff; pityrosporum folliculitis manifests as a follicular papulopustular eruption with pruritus.^[11] Neonatal cephalic pustulosis is a non-follicular pustular eruption that occurs in 3% of the hospitalized neonates.^[12] *M. furfur* is known to have a role in the pathogenesis of atopic eczema.^[4] Tinea versicolor is increasing in incidence in view of the rise in immunosuppressive viral infections in the communities. A large-scale study is needed to understand the prevalence of this skin disease. This study is conducted in a tertiary teaching hospital to know the prevalence and clinical presentations in this part of Kerala.

Type of Study

The study was a prospective, descriptive, and cross-sectional study.

Period of Study

The study period was from April 2016 to September 2017.

Institute of Study

This study was conducted at Kannur Medical College Hospital, Anjarakandy, Kannur.

MATERIALS AND METHODS

This study was conducted in a tertiary teaching hospital of northern Kerala between April 2016 and September 2017. 187 patients attending the Department of Dermatology with symptoms of superficial skin infections were included in the study. An Ethical Committee clearance was obtained, and an Ethical Committee approved consent form was used while conducting the study.

Inclusion Criteria

(1) Patients of all age groups were included. (2) Patients of all genders were included. (3) Patients with only superficial skin lesions were included. (4) Patients with a positive direct examination of tinea only were included.

Exclusion Criteria

(1) Patients with deep skin infections were excluded. (2) Patients with associated bacterial infections were excluded. (3) Patients with hypo-pigmented lesions other than tinea versicolor were excluded. A thorough clinical

history was taken in all the patients to include demographic details, duration of symptoms, and history of sweating and itching. The demographic details included age, sex, occupation, symptoms, duration, history of recurrence, animal contact, associated dandruff, family history, and use of shampoo and oiling the body. Following clinical examination, skin scraping was collected from all the patients who were diagnosed provisionally with pityriasis versicolor infection. Direct microscopic examination of specimens with 10% KOH and lactophenol cotton blue stain was done. All the data were analyzed using the standard statistical methods.

OBSERVATIONS AND RESULTS

Among the 187 patients included in the study, 109 were males and the remaining 78 were females with a male to female ratio of 1.39:1. The number of patients between 0 and 20 years were 36 (19.25%), 20–40 were 79 (42.24%), 40–60 were 41 (21.92%), and above 60 years were 31 (16.57%). The mean age was 31.65 ± 5.25 . In this study, students were 37 (19.78%), housewives were 28 (14.97%), laborers were 31 (16.57%), office goers were 23 (12.29%), agriculturists were 46 (24.59%), and shopkeepers were 22 (11.76%). 67 (35.82%) patients were with pityriasis versicolor complaints for 1–2 years, 59 (31.55%) were for 2–4 years, and 61 (31.62%) were for 4–6 years. The mean duration was 4.30 ± 1.20 years. Among the 187 patients, 118 (63.10%) were newly registered cases, and the remaining 69 (36.89%) were recurrence cases. There was a history of family members having similar complaints in 64 (34.22%), and in 123 (65.77%) there was no family history. History of associated dandruff was observed in 49 (26.20%) and no dandruff in 128 patients (68.44%) and 75 (40.10%) patients were using shampoo in their daily head bath, and 112 (59.89%) were not using shampoo. 72 (38.50%) patients were using oil to apply to the body, 144 (77.00%) to the hair, and 125 (66.84%) were using both [Table 1].

The number of cases registered in the months of April and May was 52; 39 in the months of June and July, 23 in August and September, 11 in October and November, 24 in December and January, and 38 in February and March [Table 2].

In this study among the patients, lesions were observed on the chest in 56 (29.94%), back in 29 (15.50%), on the neck in (19.78%), in axillae in (13.90%), on the face in 13 (06.95%), on the abdomen in (24.59%), and on limbs in 20 (10.69%) patients [Table 3].

Hypo-pigmented lesions were noted in 83 (44.38%) of the patients in the study. Hyper-pigmented lesion in

Table 1: Demographic data in the study group (n=187)

Observation	Number (%)
Age	
0–20	36 (19.25)
20–40	79 (42.24)
40–60	41 (21.92)
>60	31 (16.57)
Gender	
Male	107 (57.21)
Female	080 (42.78)
Occupation	
Students	37 (19.78)
Housewives	28 (14.97)
Laborers	31 (16.57)
Office goers	23 (12.29)
Agriculturists	46 (24.59)
Shopkeepers	22 (11.76)
Duration (Years)	
1–2	67 (35.82)
2–4	59 (31.55)
4–6	61 (32.62)
Recurrence	
Yes	069 (36.89)
New case	118 (63.10)
Family history	
Yes	064 (34.22)
No	123 (65.77)
Dandruff	
Yes	049 (26.20)
No	128 (68.44)
Using shampoo	
Yes	075 (40.10)
No	112 (59.89)
Application of oil	
Body	072 (38.50)
Hair	144 (77.00)
Both	125 (66.84)

Table 2: The incidence in different months of the year (n=187)

Seasonal months	Number (%)
April–May	52 (27.80)
June–July	39 (20.85)
August–September	23 (12.29)
October–November	11 (05.88)
December–January	24 (12.83)
February–March	38 (20.30)

59 (31.55%) and mixed type were seen in 45 (24.06%) patients [Table 4].

Comorbid diseases were noted in 34/187 (18.18%) of the patients in this study. Among them, 12/34 were having diabetes mellitus (35.29%), renal disorders in 08/34 (23.52%), patients using steroids for various systemic illnesses were 07 (20.58%), patients with malignancies were 3 (08.82%) and with immunosuppressive diseases were 4 (11.76%), [Table 5].

Table 3: The incidence of lesions in different parts of the body (n=187)

Site of lesions	Number (%)
Chest	56 (29.94)
Back	29 (15.50)
Neck	37 (19.78)
Axillae	26 (13.90)
Face	13 (06.95)
Abdomen	46 (24.59)
Limbs	20 (10.69)

Table 4: The pigmented nature of lesions in the study (n=187)

Type of lesion	Number (%)
Hypo-pigmented	83 (44.38)
Hyper-pigmented	59 (31.55)
Mixed	45 (24.06)

Table 5: The comorbid conditions in the study group (n=34)

Comorbid diseases	Number (%)
Diabetes mellitus	12 (35.29)
Renal disorders	08 (23.52)
Using Steroids	07 (20.58)
Malignancies	03 (08.82)
Immunosuppressive diseases	04 (11.76)

DISCUSSION

The present study was a hospital based prospective study drawing patients from all walks of life and professions including students. The laborers and agriculturists were from neighboring villages. 20–40 years age group was most frequently affected with 42.24% patients. The overall mean age observed was 31.65 ± 5.25 . This was followed by 40–60 years age group. Kaur *et al.*^[13] in their study also observed similar findings with mean age of 30.25 ± 1.85 ; unlike Krishnan and Thapa^[14] who found 15–29 years being the most common age group suggesting that the peak of infection coincides with the sebum production and hormonal influence. The mean duration of the disease in this study was 4.30 ± 1.20 years. Banerjee^[15] had reported that duration of disease in 28.75% of the patients was between 1 and 20 years. In this study, male patients were more affected than female patients. This is similar to the observation made by Ghosh *et al.*,^[17] Krishnan and Thapa,^[14] and Rao *et al.*,^[16] which was explained as due to major involvement of males in outdoor activities with maximum exposure to high temperature and humidity. However, Kaur *et al.*^[13] observed in their study equal predilection in both genders to pityriasis versicolor. While Nikpoor and Leppard^[18] indicated the incidence of this infection was

higher in women. The present study the hypo-pigmented lesions 83 (48.34%) were more common than hyper-pigmented lesions 59 (31.55%); mixed lesions were observed in 45 (24.06%) patients. Similar findings were observed by Shah *et al.*^[19] wherein hypo-pigmented were seen in 84.17%, hyper-pigmented in 8.63%, and mixed in 07.19%. Krishnan and Thapa^[14] observed hypo-pigmented in 84%, hyper-pigmented in 9%, and mixed in 6% of their patients. Kabbin *et al.*^[20] observed hypo-pigmented in 67%, hyper-pigmented in 31%, and mixed in 2% of their patients. Rao *et al.*^[16] observed mixed variety in 16.60%, hyper-pigmented in 08.30%. This variation of morphological appearance could be explained by the differences in climatic conditions and different study population skin color of the native populations. In this study, chest wall was the most common site of presentation of the lesions with 56 (29.94%), followed by abdomen 46 (24.59%) and then the neck 37(19.78%). Krishnan and Thapa^[14] Rao *et al.*^[16] and Kabbin *et al.*^[20] found in their patients the lesions being common on trunk, neck, and back. The distribution of lesions depends on the distribution and abundance of sebaceous glands in that particular region. Family history was seen in 34.22% of the patients in this study whereas Ghosh *et al.*^[16] and Rao *et al.*^[16] observed in 25% of their patients. Table 1 summarize the different occupations and social status of the patients of this study, and it was observed that there was no correlation between their occupations and the prevalence of appearance of the lesions of pityriasis versicolor. Similarly, there was no correlation between the disease and the personal hygiene. It has been documented that military personnel, athletes, and those doing hard works that usually associated with hyper sweating were more vulnerable to pityriasis versicolor infection.^[21] More than 72% of the patients came to the department to seek remedy for the cosmetic reason rather than itching or inflammation in this study. More than 48% of the patients registered in the months of April to July in this study Table 2 correlating with the hot, humid nature of weather during these months in this part of Kerala. Rao *et al.*^[16] and Ghosh *et al.*^[16] showed prevalence in the months of August to September in their studies. Recurrence rate in this study observed was 36.89% which resembles the studies of Ghosh *et al.*^[16] with 48.18%; but Rao *et al.*^[16] observed only in 1.60%, which may be attributed to the idiosyncratic nature of the condition, the local factors such as humidity, high temperature that remain unchanged and which help in contributing to varying recurrence rates of yeast even after treatment. Comorbid conditions in this study were noted in 34/187 (18.18%) of the patients. Among them, 12/34 were having diabetes mellitus (35.29%), renal disorders in 08/34 (23.52%), patients using steroids for various systemic illnesses were 7 (20.58%), patients with malignancies were 3 (08.82%), and with immunosuppressive diseases were 4 (11.76%). Ghosh *et al.* have reported coexisting systemic

diseases such as diabetes mellitus, lymphoproliferative malignancies, and use of immunosuppressive and systemic steroids in 2.73%, 1%, and 2.73%, respectively. KOH was positive in 80% of cases in our study as like other studies by Kindo *et al.*^[22] Chaudary *et al.*^[23] while Rao *et al.*^[16] have reported relatively higher rates as 46.60%.

CONCLUSIONS

Pityriasis versicolor is a common skin disease seen in dermatology practice of any geographic area. The most common age group affected by pityriasis versicolor was 20–40 years. Male gender was commonly affected. There was no significant relationship between the prevalence and the age, gender, profession, personal hygiene, family history, and personal hygiene. Peak incidence of pityriasis versicolor was observed in April to July months. Chest was the most common site of presentation of lesions followed by abdomen and neck. Hypo-pigmented lesions were more common. Comorbid diseases were associated in 18.18% of the total patients.

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