Section: Dermatology

Original Research Article

CLINICOMYCOLOGICAL PROFILE OF PITYRIASIS VERSICOLOR - A CROSS SECTIONAL STUDY FROM A TERTIARY CARE HOSPITAL IN SOUTH INDIA

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Abstract

Background: Pityriasis versicolor (PV) is a superficial fungal infection of the stratum corneum caused by Malassezia yeasts that is moderate, persistent, and typically asymptomatic. The current study aims to evaluate the clinicomycological profile in patients with pityriasis versicolor. **Material & Methods:** The observational study was conducted at the Department of Dermatology in a tertiary care hospital in southern India for one year. Patients with macules with or without erythema were included in the study with characterization based on skin color and scales. Demographic details, patient medical history, and examination of lesions, color, and skin texture were evaluated. KOH-treated skin scraping material was used for mycological examination. **Results:** One hundred patients were enrolled in the study, with a male predominance (69.0%) and 36.0% of affected patients aged 21-30. Clinical symptoms were reported in 28% of the patients, and recurrence was prevalent in 9% of the population. Macules were reported in 88% of the study population, patch lesions in 29%, and follicular skin in 9% of the patients. A positive KOH mount was reported in 95% of the patients 71% of patients were reported with the KOH culture method. **Conclusion:** PV is one of the prevalent skin fungal infections reported in southern India, which began at a younger age. The use of KOH mount reported a positive mycological profile in most patients, which can pose a beneficial, quick, and cost-effective method and helps in the early diagnosis of PV.

INTRODUCTION

Pityriasis versicolor (PV), known as tinea versicolor, is a superficial, chronically recurrent fungal infection of the stratum corneum characterized by scaly, irregular macules dyspigmented. It most frequently affects the trunk and extremities. Pityriasis versicolor has been linked to various systemic disorders, including diabetes, Cushing's disease, immunosuppressive conditions, and corticosteroid use.[1] Malassezia yeast, a dimorphic fungus, causes PV. In PV lesions, the organism's mycelial phase predominates. The genus Malassezia has seven distinct species, according to a systematic review performed in 1996.[2] Isolation of Malassezia species from skin scrapings using a lipid-rich medium (e.g., olive oil over malt extract or a Tween medium) has little diagnostic utility and is not generally suggested. Microscopical examination of the fungus reveals short, thick hyphae with many spores of varying sizes (spaghetti and meatball appearance), a symptom of pityriasis versicolor.[1]

The most prevalent fungal diseases are superficial fungal infections. According to the World Health Organization (WHO), the incidence of superficial fungal infection is 20-25% globally. Its prevalence varies among countries. It is more common in tropical and subtropical nations like India, where the heat and humidity are excessive for most of the year. Malasseziosis, dermatophytosis, piedra, and tinea nigra are superficial fungal diseases that

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mainly infect the cornified layer of skin and its appendages.[3] The lipophilic yeast Malassezia species is the most prevalent cause of dandruff, seborrhoeic dermatitis, folliculitis, papillomatosis, and tinea (Pityriasis) Versicolor. Unfortunately, the precise species involved is yet unknown. The prevalence of fungal infection is also affected by the patient's social, geographical, and economic circumstances.[4] Dermatophytosis is the most common kind of superficial fungal infection caused by dermatophytes, a group of closely related keratinophilic fungi capable of developing by entering the keratin of skin, hair, and nails to collect nutrition.[5]

Trichophyton, Epidermophyton, and Microsporum are the three genera of dermatophytes. Moreover, dermatophytes can be classified as anthropophilic, zoophilic, or geophilic based on their predominant habitat relationships. Species from all three categories can infect humans. Dermatophytic infections have numerous clinical symptoms that are termed after the anatomic areas are affected. The severity of the sickness is determined by the strain of the infecting dermatophyte, the host's susceptibility, and the location of the infection. Dermatophytic fungi affect around 20- 25% of the world's population, and the prevalence is steadily growing.[6] PV is distinguished by macules and finely scaled plaques in various hues ranging from white (the alba or achromats type) to pink, salmon, or brown. A red variety (PV rubra) was recently described.[7] Malassezia is an endogenous saprophyte that, under certain conditions, transforms from saprophytic yeast to a parasitic mycelial form. PV is one of the most frequent dermatomycoses, affecting up to 40% of the population in areas with warm, humid climates.[8]

Because of the vast environmental variables, PV's epidemiology and clinical profile will likely differ from one geographic region to the next. Many variables have been linked to an increased risk of developing PV, including increased ambient humidity, oily preparations and lotions (owing to the organism's lipophilicity), corticosteroid usage, genetic predisposition, malnutrition, and hyperhidrosis.[9] Despite its prevalence, the precise size of the problem defies quantification. Dermatophytosis research in India has garnered greater interest in recent years since mycosis affects one-fifth of the world's population.[6] This study aimed to identify the most common Malassezia species linked with PV in South India and investigate the clinicomycological profile of PV.

MATERIALS AND METHODS

The observational study was conducted in the department of dermatology at a tertiary care hospital in south India for one year, from June 2021 to May 2022. The study was performed after taking proper consent from the participants included in the study.

Inclusion Criteria

Macule with or without erythema characterized by branny scaling, patchy lesions with varying changes of skin color, and patients of both the sex were included in the study.

Exclusion Criteria

Individuals with hypo pigmentary skin conditions other than PV and those on antifungal medication (both systemic and topical) were excluded from the study.

After receiving clearance from the Institutional Ethics Committee and informed written consent from the patients, clinically diagnosed cases of PV of all ages and genders attending the dermatology outpatient department were included in the study. The study group comprised 100 patients diagnosed with PV by the dermatologist. A complete history was taken, including the patient's age, gender, employment, symptoms, duration, history of recurrence, climatic effect, and family history. A comprehensive clinical examination was performed to assess the features and distribution of lesions, the color and texture of the patient's skin, and any other related dermatological or systemic disorders. Wood's light examination verified the cutaneous lesions of pityriasis versicolor. Under the microscope, KOH-treated skin scraping material was examined for mycological confirmation. The data were collected and analyzed using a pre-planned, pre-tested semi-structured routine. The presence or absence of risk variables was also documented. The Chi-square test was used to determine the statistical significance of the relationship between distinct variables. The SPSS software was used to examine the data (SPSS). A p-value of < 0.05 was considered significant.

RESULTS

Out of the total 100 patients included in the study having PV, 31 (31.0%) were female, and 69 (69.0%) were male. A male predominance was recorded in the study. The maximum number of patients aged between 21 and 30 was 36 (36.0%), followed by 11-20 years (23%). Only 2 (2.0%) patients were found in the age group of greater than 61 years. 89 (89.0%) patients with no family history of PV were recorded [Table 1].

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Table 1: Demographic details of the patients

		Count	Column N %
AGE GROUP	<10	5	5.0%
	11-20	23	23.0%
	21-30	36	36.0%
	31-40	18	18.0%
	41-50	13	13.0%
	51-60	3	3.0%
	>61	2	2.0%
SEX	Female	31	31.0%
	Male	69	69.0%
FAMILY HISTRORY	No	89	89.0%
	Yes	11	11.0%

Most of the patients were asymptomatic, about 72 (72.0%), and 28% were recorded for the symptoms. 91% of patients did not show any disease recurrence. Most patients, 90%, did not show any systemic illness. However, 8% recorded diabetes mellitus and 3% for hypertension [Table 2].

Table 2: Patients distribution for symptoms, recurrence, and systemic illness

		Count	Column N %
SYMPTOMS	Absent	72	72.0%
	Present	28	28.0%
RECURRENCE	No	91	91.0%
	Yes	9	9.0%
SYSTEMIC ILLNESS	DM	8	8.0%
	HTN	3	3.0%
	No	90	90.0%

Most patients with macule lesions found 88%, followed by patch lesions in 29%. Most lesions were hypopigmented in 77% of the patients, whereas hyperpigmented lesions were seen in 33%. Most patients showed mild scaling in 55% of the total participants. 74% of the patients showed no associated skin condition, and 6% reported acne [Table 3].

Table 3: Association of PV with clinical profile

		Count	Column N %
TYPE OF LESION	FO	9	9.0%
	MA	88	88.0%
	PA	29	29.0%
COLOUR	HYPER	33	33.0%
	HYPO	77	77.0%
SCALING	MILD	55	55.0%
	MODERATE	30	30.0%
	SEVERE	15	15.0%
NUMBER	1-5	75	75.0%
	5-10	1	1.0%
	6-10	18	18.0%
	>10	7	7.0%
ASSO SKIN CONDITION	No	74	74.0%
	ACNE	6	6.0%
	ALOPECIA AREATA	1	1.0%
	ATOPIC DERMATITIS	1	1.0%
	DPN	1	1.0%
	ICHTHYOSIS	1	1.0%
	MILIARIA	1	1.0%
	PSORIASIS	2	2.0%
	SEBORRHEIC DERMATITIS	3	3.0%
	SEBORRHOEA SCALP	4	4.0%
	SKIN TAG	1	1.0%
	TINEA CORPORIS	4	4.0%
	VITILIGO VULGARIS	1	1.0%

Acne was the most commonly associated skin condition with 76% of patients. Seborrhea scalp and tinea corporis were reported in 4 patients each (4.0%), followed by seborrheic dermatitis in 3 patients and psoriasis in 2 patients (2.0%), respectively. [Table 4]

Of the 100 patients included in the study, 95% were detected by KOH mount and 71% by KOH culture. 76% of the patients gave positive Wood Lamps tests in the study. [Table 4]

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Table 4: Clinical Examination Parameters

		Count	Column N %
WOODS LAMP	No	24	24.0%
	Yes	76	76.0%
KOH MOUNT	No	5	5.0%
	Yes	95	95.0%
KOH CULTURE	No	29	29.0%
	Yes	71	71.0%

DISCUSSION

According to our study, male preponderance was recorded, and this was by other studies as well.[1] Another study also showed the male predominance of male: female ratio of (M: F = 1.27:1). It is a well-known fact that males engage in various outdoor activities, which predisposes them to PV in hot and hot and humid environments. In one research, there was only a tiny male preponderance, which may be explained by the fact that females are more worried about the look of their skin; also, in our culture, PV is mistaken for vitiligo. Thus, fear causes them to seek medical attention very away.[9] According to studies by Kaur et al. and Tarazoorie et al., there are no variations in the development of PV between the sexes, and there is general agreement that people of either sex are equally prone to have this infection.[10,11]

PV is most typically found in teens and young adults. In another survey, the most prevalent age group was 11 - 20 years, followed by 21 - 30 years.[9] In our study, most patients were found in the 21-30 years group. A similar finding was noted in a study by Ghosh et al. (11-20 years) and Santana et al. (10 – 19 years).[1-12] Much additional research discovered that the most prevalent age group engaged was between the ages of 21 and 30, which shows the similarity between our results.[13]

The fact that Malassezia yeasts (the causative organism of PV) are lipophilic and that there are hormonal changes with increased activity of sebaceous glands in adolescents and young adults explains why this illness is widespread in this age group of 11 - 30 years.[14] Just 4.7% of patients had PV before age 10, and only 2.7% had PV beyond age 50.[9] The research found that around 25% of patients had a family history.[1] In the present study, 11% of patients had a family history. Hafez et al. had gotten somewhat similar results.[15] Another study found a higher percentage of positive family history (38.30%).[16]

A limited percentage of patients in one research had concurrent systemic conditions such as atopy, diabetes, anaemia, hypertension, fibroadenoma, urinary tract infections, arthritis, and mental disorders. The most common systemic diseases related to PV were atopy and diabetes, and patients with these conditions typically had weakened immunity, which can contribute to disease flare-ups and persistence.[16] The findings were comparable to those of previous research, such as Banerjee S, who discovered that the most common disorders related to PV were diabetes and hypertension.[17] In our study, 8% of patients had diabetes, followed by 3% with hypertension. The majority of them did not have any systemic illness. The findings of the Ghosh SK et al. investigation were comparable in linked systemic disorders, with diabetes and lymphoproliferative malignancies being the most prominent conditions.[1] Another study yielded a different outcome, indicating no link between PV and diabetes.[18]

In terms of PV symptoms in one research, most individuals were symptomatic, with itching being the most common. Nevertheless, several earlier studies found that most PV patients had no signs, while the minority of patients with symptoms complained of itching as the most prevalent symptom.[19] This is similar to our study, which shows that most patients were asymptomatic. The lesions found in patients were of the hyperpigmented form rather than the hypopigmented variety.[19] In contrast, most investigations found that most PV lesions were hypopigmented.[1] This variance in the physical appearance of lesions might be attributed to climate variables and a diverse research population. PV is diagnosed primarily via clinical examination, microscopic investigation of skin scrapings, and culture.[19] In the present study, macule lesions were found in 88% of the participants. 77% of the patients were found with hypopigmented lesions.

PV is diagnosed primarily via clinical examination, microscopic investigation of skin scrapings, and culture. The research found that the KOH mount test was positive in 80% of instances.[19] Rao GS et al. found significantly lower rates (46.60%).[16] The cello-tape test and the wood's lamp test were also used in the study, and they were found to be positive in 71.8% and 77.3% of the instances, respectively. Given the statistically significant differences between the KOH mount, cello-tape, and woods lamp, our study revealed that the KOH mount test has high sensitivity and specificity in demonstrating fungal hyphae and grouped spores. Thus, the KOH mount test can be a better alternative to cello-tape and wood lamps to diagnose and confirm PV. This finding suggests that direct microscopic inspection of skin scrapings using a KOH mount provides a quick, low-cost, and sensitive diagnostic for PV diagnosis and confirmation.[19] According to the present study, the woods lamp test was positive for 76%. KOH mount was seen in 95% and KOH culture in 71% of the patients, respectively.

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CONCLUSION

In conclusion, PV is one of the most prevalent superficial fungal diseases of the skin. Our study recorded male predominance, and the majority of the patients belonged to the younger age group. In most cases, the KOH mount test was positive and may be easily utilized as a low-cost, office-based test for quick PV diagnosis and confirmation. Early diagnosis of PV cases by clinical evaluation, basic laboratory procedures, and appropriate treatment would aid in preventing recurrences and cosmetological issues.

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