

Clinico Epidemiological and Mycological Study of Pityriasis Versicolor

Shashi Hirachan¹, Shraddha Shrestha², Umesh Thapa Magar³

¹ Chief Consultant Dermatologist, Department of Dermatology, Venereology and Leprology, Bharatpur Hospital, Chitwan, Nepal

^{2,3} Dermatologist, Department of Dermatology, Venereology and Leprology, Bharatpur Hospital, Chitwan, Nepal

Abstract

Introduction

Pityriasis versicolor (PV) is a superficial fungal infection of the stratum corneum caused by a dimorphic fungus, *Malessezia* species. It is a common dermatological condition with worldwide distribution and especially prevalent in the tropical region with high temperatures and humidity. Clinically, it is usually asymptomatic with frequent recurrences and cosmetically unpleasant.

Methods

A prospective cross-sectional study was done in all patients presenting with signs and symptoms of PV. Patients under topical or oral antifungals for the past 4 weeks were excluded. Diagnosis was made clinically on history and examination. Skin scraping was examined with 10% KOH under a direct microscope, Wood's lamp examination was done to observe the fluorescence.

Results

Out of 102 cases, the male to female ratio was 1:1 and PV was found to be most common in the age group of 11-20 (37.2%). Most of the presented cases were asymptomatic (76.5%). Hypopigmented pattern was the most common morphology observed (44.1%) and chest and back was the most commonly involved sites.

On direct microscopic examination of skin scraping, KOH was positive in 73.5% of cases while fluorescence was observed in 71.6% on Wood's lamp examination.

Conclusion

PV is one of the most common superficial fungal infections, especially in tropical areas where the prevalence is expected to be more. Only a handful of studies have previously published in our country regarding the clinico-epidemiological and mycological studies of PV.

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I. Introduction

Pityriasis versicolor is a superficial fungal infection of the stratum corneum caused by the dimorphic fungi, *Malessezia* species and are clinically characterized by scaly, irregular, discoloured areas mainly on the trunk, extremities and other seborrheic areas.¹ The infection most commonly reported in adolescents and young adults.²

The genus *Malessezia* is a lipophilic fungus, which is a normal skin flora of the human body. Normally it exists in yeast form, they produce infection on transformation into mycelial form under certain conditions.³ In 90% of previous studies, *Malessezia globosa* was the predominant species isolated.⁴

Clinically, PV is usually asymptomatic while some give a history of mild pruritus. The lesions are characterized by an appearance of irregular, dyspigmented macules, patches, follicular or perifollicular with fine scales with colors ranging from white to pink, brown or salmon.⁵ Presentation is either hypopigmented (achromic), hyperpigmented (chromic) or inflamed (erythematous) PV. Patients usually seek medical advice due to cosmetic concern.⁶

Malessezia being a lipophilic fungus, occurs mostly in seborrheic areas such as face, neck, back, upper chest, arms and may coexist with seborrheic dermatitis as both are associated with *Malessezia*. Rarely the distribution may be different with the involvement of flexural regions and are known as inverse PV.³

Several predisposing factors that are associated with increased risk of acquiring PV include warm climate, increase sweating, corticosteroid use, oral contraceptive pills, pregnancy and immunosuppressive states.⁶

The diagnosis is usually done by clinical examination and laboratory confirmation is done by 10% potassium hydroxide (KOH) wet mount. On direct microscopy, examination of scales after treatment with 10%

KOH demonstrate fungal elements as pseudohyphae, fragmented to short filaments, spherical thick walled yeasts in typical “spaghetti and meatballs pattern” or “bananas and grapes pattern”.^{6,7}

On Wood’s lamp examination of the lesions, yellow-orange to green-yellow fluorescence can be observed due to the presence of pityrialactone.⁷

As diagnosis is usually done clinically, skin biopsy is not necessary for diagnosis. On histopathological examination, fungal elements may be seen within the stratum corneum of the epidermis and special stains may be required. As the *Malessezia* species require lipid-rich medium for growth, culture in standard media will not allow yeast to grow to identify the organism.⁸

II. Methodology

A hospital-based cross-sectional study was conducted at Out Patient Department in Department of Dermatology and Venereology and Department of Pathology, Bharatpur Hospital, Bharatpur, Chitwan. All patients who attended Dermatology OPD with pityriasis versicolor were selected for the study from February to July 2020. Ethical clearance was taken from the institutional review board.

Sample size of cases was calculated by using the formula

$$n = (Z_{\alpha}^2 PQ) / d^2$$

- n = required sample size
- Z_{α} = z deviate corresponding to the desired reliability level (1.96) for 95% reliability
- P = estimated prevalence of pyoderma according to the previous study $(6.6)^9 = 0.066$
- $Q = 1 - P = 0.934$
- d = maximum tolerable error = (5%) = 0.05
- Therefore
- $n = \{(1.96)^2 * 0.066 * 0.934 / (0.05)^2\}$
 $= 94.72 \approx 95$
- Minimum sample size = 95

One hundred and two randomly selected patients with the diagnosis of pityriasis versicolor who have not taken antifungal (topical or systemic) 4 weeks prior to consult were included in the study. On the basis of history and clinical examination, cases of pityriasis versicolor were diagnosed. Patients were explained about the purpose of the study and methods to be used. A detailed proforma of the participants was filled by the researcher.

For the collection of skin scrapping, the skin lesion was initially cleaned with 70% isopropyl alcohol to remove the surface contaminants and was allowed to dry. With the help of edge of a glass slide, skin scrapping was collected from the active edges of the lesion. The scales obtained were then sent to the microbiological department and were examined under a light microscope with 10% KOH. The cutaneous lesions of pityriasis versicolor were also confirmed by Wood's lamp examination.

Patients were started on topical or systemic treatment depending on the extent of involvement.

The collected data was stored and analyzed with statistical software (SPSS version 22.0 for windows) to get a final interpretation. Results were analyzed using appropriate statistical methods.

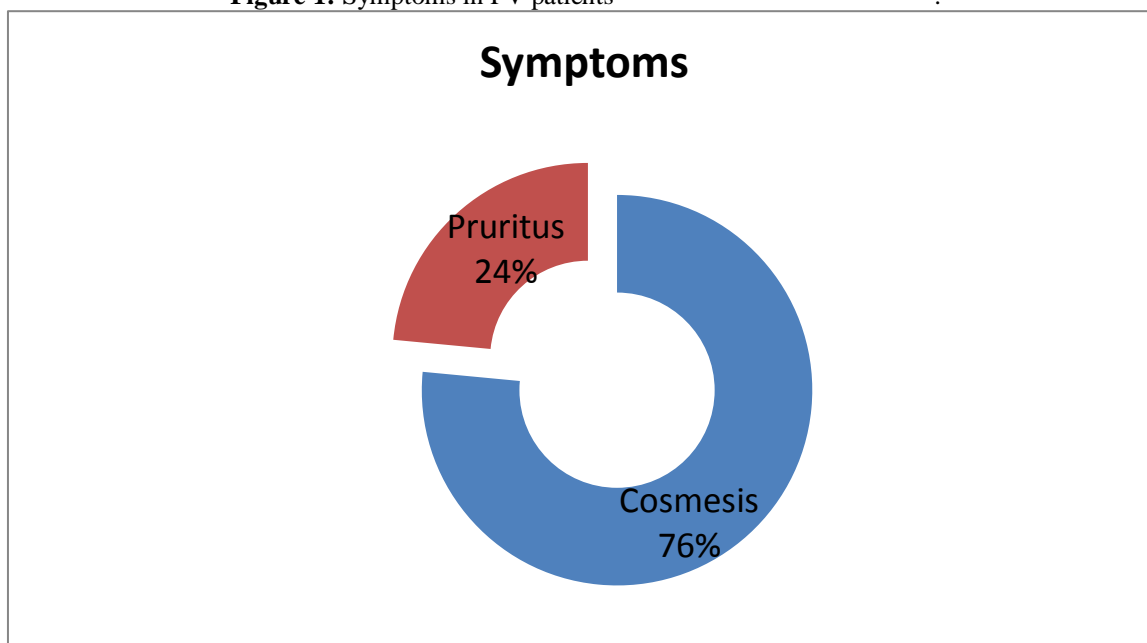
III. Results:

A total number of 102 randomly selected patients with pityriasis versicolor were studied for their clinico-epidemiological profile. Out of 102 cases, the male to female ratio was 1:1. Most of the patients were young adults with the maximum number of cases found in the age group of 11-20 years (37.3%) and 20-30 years (30.4%). The disease was rare above 50 years old patients. Majority of patients (52.9%) were students.

Maximum number of cases (39.2%) presented after 1 year of onset due to continuous progression of the asymptomatic lesion while 23.5% presented within 1 month of onset.

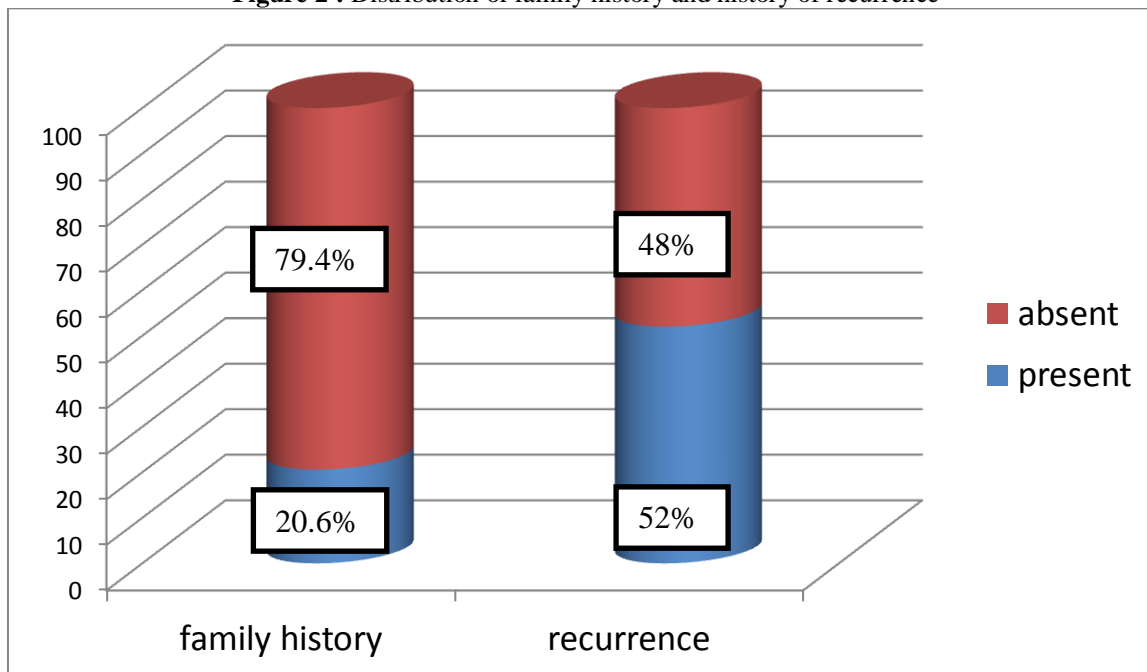
Out of 102 cases, 78 (76.5%) presented with no symptoms and only cosmetic concerns while 24 (23.5%) complained of mild pruritus (figure 1)

Figure 1: Symptoms in PV patients



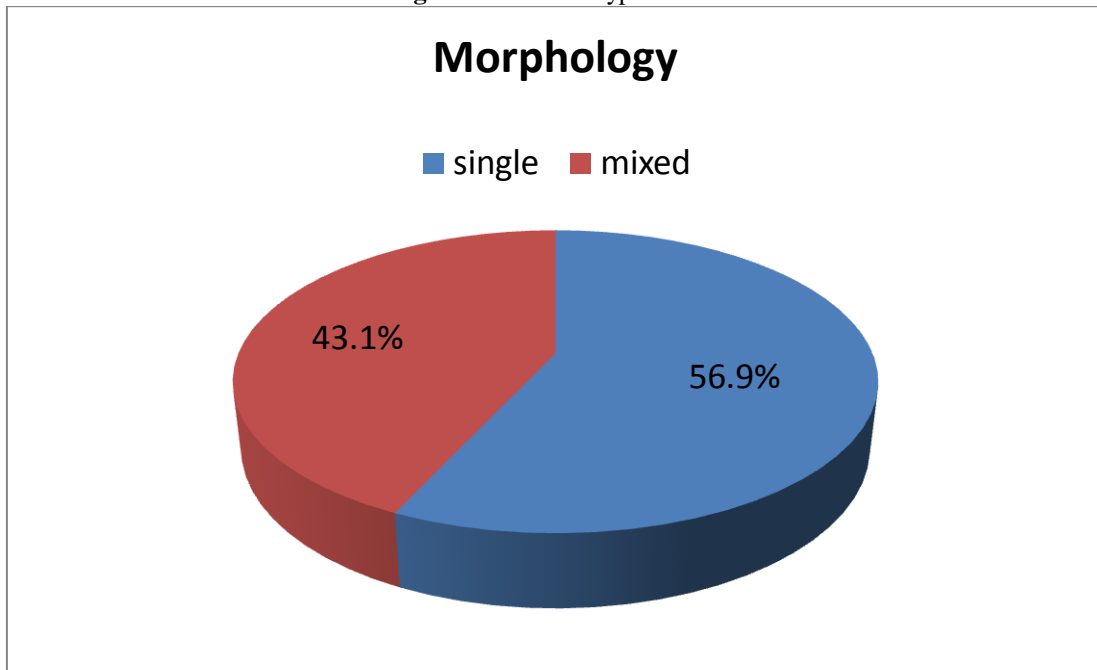
Among the cases, 79.4% denied family history and 20.6% had family history in their first-degree relatives. (figure 2) Fifty three cases (52%) had a history of recurrence with 81% reported in summer while 19% reported recurrence in winter.

Figure 2 : Distribution of family history and history of recurrence



On assessing the body sites, the majority of patients presented with involvement of more than one site (72.5%), of which chest was the most commonly involved site (56.9%) followed by back and leg was the least commonly involved (2%). Regarding the morphology, 56.9% presented with a single clinical type while 43.1% presented with mixed type (figure 3)

Figure 3 : Clinical types of PV



Among the 58 cases with single clinical type, hypopigmented was the most common, observed in 79.5% compared to hyperpigmented in 12%, follicular in 6.8% and guttate in 1.7%. Associated dermatological disorder was seen in 33.3% with acne being the most common (64.7%) followed by seborrheic dermatitis (29.4%).

Scaling was present in 86.2% of patients. Treatment history was given by 39 (38.2%) of which topical medication was used by 82% of cases while 12.8% gave a history of use of both topical and systemic medication and 5.2% had used some traditional treatment options. Out of 102 samples, KOH was positive in 73.5% while fluorescence was present in 71.6% on wood's lamp examination. (table 1)

Table 1 : Distribution of KOH test and Wood's lamp examination

	KOH test n (%)	Wood's lamp n (%)
Positive	75 (73.5%)	73 (71.6%)
Negative	27 (26.5%)	29 (28.4%)

IV. Discussion

This study was conducted at a tertiary care hospital located in the tropical areas of the country where the prevalence of PV is much higher. Majority of the facts revealed in our study were similar to those of previous studies while few facts differed. In our study, the male to female ratio was found to be 1:1 which is contrast to many studies which had male preponderance.^{10, 11} But, in a study done by Santana et al female predominance was reported.² As females seek medical care due to cosmetic concerns and male are more involved in outdoor activities, there was no sex predilection reported in our study.

PV was commonly reported in young adults of the age group 11-20 years (37.3%) followed by 21-30 years (30.4%). This result is consistent with other studies conducted in Nepal and India.^{1, 12} This finding may be explained due to increased activity of the sebaceous gland during puberty. As the majority of cases were teenagers and young adults, students were most commonly affected.

Maximum number of cases presented after one year of onset of lesion which could be due to continuous progression of asymptomatic lesions. This finding is different than the study done in Indonesia where 72% cases presented within 1-12 months of onset of lesion.¹³

Only 23.5% complained of mild pruritus while the remaining were asymptomatic. This finding is consistent with other studies where the majority of cases were asymptomatic.^{1, 14} In our study, a positive family history was observed in 20.6% which is partially similar to study done by Ghosh et al.¹ In our study, 52% had a history of recurrence of which 81% of cases reported recurrence in summer season which was similar to studies conducted by Kambil et al¹⁵ and Ajanta et al.⁵

The major site of involvement of PV was chest followed by back and leg was the least commonly involved site which was similar to the study conducted in Nepal and Indonesia.^{12, 13}

In the present study, 56.9% presented with a single lesion of which hypopigmented clinical type was observed in 79.5%. This finding correlates with studies conducted by Imwidthaya et al and Gatha Rao et al who reported hypopigmented lesions 83% and 75% of cases, respectively.^{11, 16} Acne was the most common dermatological disorder associated with PV followed by seborrheic dermatitis. In contrast, in a study done by Ghosh et al seborrheic dermatitis was most commonly associated dermatological disorder in PV.¹

On light microscopic examination with 10% KOH, pseudohyphae with filaments and yeasts were seen in 73.5% of cases. This finding is supported by a study done by Chaudhary et al where the cases had higher rates of KOH positivity.¹⁷ On wood's lamp examination, fluorescence was observed in 71.6% of cases which was partially similar to the study done by Krisanty et al.¹³

V. Conclusion

Overall, the clinico-epidemiological profiles of PV observed in the present study differs in a few facts from those observed by previous researchers in gender predisposition, prevalence of itching and prevalence of mixed clinical type of PV. Hence, for a better understanding of its epidemiology, further studies and continuing researches are necessary.

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