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Original Research Article

A study on histopathological and dermoscopic correlations in pityriasis versicolor

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ABSTRACT

Background: Pityriasis versicolor (PV) is a superficial mycoses caused by a lipophilic fungus; Malassezia yeast. Dermoscopy can be used as a complementary tool for assessing PV, but histopathology is confirmatory, whenever results of KOH (potassium hydroxide) examination are inconclusive. There is dearth of Indian data on the findings of dermoscopy and histopathology of PV.
Objectives: To find the correlation between dermoscopic and histopathological features in Pityriasis versicolor.
Materials and Methods: Fifty consecutive patients diagnosed with PV were recruited in the cross sectional study. KOH mount of the skin scrapings from the lesions was done on the patients and were positive in all the patients. Dermoscopy was done in all the patients using ILLUCO Dermoscope and features were noted. Biopsy was sent for histopathological examination.
Results: Hypopigmented variant was the most common type (62%) in the patients. Dermoscopic analysis showed altered pigmentary network as the most common finding in almost all the patients, followed by scaling which was present in 21 patients. Folliculocentric pattern was seen in 20% of the patients. A peculiar finding contrast halo ring around the primary altered pigmentation was observed in 4 patients. Invasion of hair follicle by yeast was noticed in 18% patients. The most common histopathological change seen was perivascular infiltrate (78%) followed by hyperkeratosis (62%). There was presence of hyphae spores in 40% of the patients. 42% of the patients had spongiosis in their histopathological pattern. Special stain was done in 20 patients.
Conclusion: Dermoscopy with features such as altered pigmentary network, contrast halo sign and yeast invasion of hair follicles when complemented with the histopathological features like perivascular infiltrate, hyperkeratosis, hyphae spores and spongiosis help in diagnosing PV.

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1. Introduction

Tinea versicolor or Pityriasis versicolor (PV) is caused by Malassezia genus. Malassezia genus is a dimorphic lipophilic yeast. In PV, multiple round to oval pink-to-light brown patches with fine white scales are seen primarily on the trunk and upper extremities. On naked eye examination, the scales may be inconspicuous. Lesions are usually asymptomatic or mild irritation and itch may occur. The hot climate, humidity, occlusion and poor hygiene are the main predisposing factors. In the present study, we tried to correlate the histopathological and dermoscopic features of Pityriasis versicolor.

2. Materials and Methods

This was a cross sectional study conducted at a tertiary care centre in Bagalkot, Karnataka. Total of 50 consecutive

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patients attending the out patient department who were clinically diagnosed with PV. Exclusion criteria included history of previous antifungal treatment in past one month. Dermoscopic features were recorded in ILLUCO dermoscope. Biopsy was sent for histopathological examination.

3. Results

Of the 50 study patients, 29 were males and 21 were females.(M:F=3:2). The mean age of presentation was 20 years (Range 10-30 years) with more than half (27/50=54%) belonging to 21-30 years of age. Shoulder/Upper back was the most commonly affected sites in 29(58%) followed by chest in 25(50%) and back 23(46%) and in face 6(12%) patients. We observed that upper back was the most common site of predilection in the study cases.

Hypopigmented PV was seen in 31/50(62%), hyperpigmented PV was seen in 11/50(22%) while a combination of lesions was present in 7/50(14%). Most of the patients were asymptomatic, i.e no itching/pruritus (39/50=78%).

The most common dermoscopic feature was alteration in background pigmentation in almost all the patients. Scaling was also present in 21 patients which was evident on dermoscopy. The scales were mainly seen along the dermatoglyphics. The lesions were found to be folliculocentric in 10 patients. Halo sign was seen in 4 patients around the primary lesion. Another characteristic feature was the invasion of hair follicles by the yeast as was noticed in 18% of the patients. The most common histopathological change seen was perivascular infiltrate (39/50-78%) followed by hyperkeratosis (31/50-62%). There was presence of hyphae spores in 40% of the patients. 21/50-42% of the patients had spongiosis in their histopathological pattern. Special stain was done in 20 patients.

4. Discussion

PV is a common superficial mycoses in India. Most of the lesions are asymptomatic. Patients are concerned about the pigmentary changes in the areas involved. It is most important to correctly diagnose the infection because it will reduce the patient anxiety and also provide required mycological cure. The use of dermoscopy as a complementary tool to diagnose Malassezia infections is recently explored as compared to histopathological investigation and KOH mount.[1–6]

The epidemiological characteristics of the patients involved in our study matched with the studies conducted previously. The average age of the patients is around 20 years with more than half (54%) falling in between 15-25 years of age group. This observation was seen similarly to the other studies from India.[7–9] We also noticed a slight male predominance (3:2). It often affects people who perspire heavily. It most commonly affects people around teenage due to hormonal fluctuations. PV is most commonly found in tropical countries like India with high humidity and high temperatures. The highest prevalence of PV was observed in 15-25 year old age group, suggesting that the peak of infection is coincided with ages when the sebum production is in the highest level. It is most commonly seen on the upper back/shoulder region[7–9] as Malassezia grows in the warm, moist and oily environments. Hypopigmented lesion was more commonly seen than other variants. Most of the patients (78%) were asymptomatic and the lesions were only of cosmetic appearance to the patient. Sometimes, mild irritation or itch can be seen.

Dermoscopic analysis of the lesions revealed that the most common finding was altered pigmentary network, folliculocentricity was observed in 20% of the patients. Scaling was observed in 42% of the cases. Another common finding of dermoscopic feature was contrast halo sign around the primary lesion. Follicular invasion resulting in hypopigmentation of the involved follicle was seen in 9 patients. It is believed that hypopigmentation in PV usually results from presence of fungus in the skin that initiates production of abnormal melanosome granules and possibly the faulty transfer of these granules to the keratinocytes.[8] Other have attributed to the release of dicarboxylic acid like azelaic acid by fungus which tends to inhibit enzyme tyrosinase and cause cytotoxic damage to the melanocyte. On the other hand, increased pigmentation reportedly is the result of thickened stratum corneum and perivascular lymphocytic infiltrate in dermis that stimulate melanogenesis.[8]

Ishmeet Kaur et al put forward a theory that the contrast halo in hypopigmented variant could be a result of compensatory melanogenesis to the cytotoxic damage and abnormal melanosomes in the primary lesion. While in the hyperpigmented variant, the contrast halo could be due to consumption of melanocytes in the process of stimulated melanogenesis occurring as a result of perivascular inflammation in the primary lesion. Hypopigmentation of the hair follicle could be due to follicular invasion by Malassezia yeast which is known to show a similar tendency of invasion in pityrosporum folliculitis.[10]

In this study we propose that altered pigmentary network is due to the decrease in number of melanocytes on histopathology. Scaling is due to hyperkeratosis on histopathology.[11–14]

5. Conclusion

Use of dermoscope in the infections is still in a developing phase. Dermoscopic evaluation along with their histopathological features gives the better understanding of the disease and also gives useful clues to the diagnosis of pityriasis versicolor. Large scale studies correlating

Table 1: Dermoscopic features in pityriasis versicolor

Dermoscopic feature	Hypopigmented variant (31)	Hyperpigmented variant (11)	Mixed variant (8)	Total (50)
Altered pigmentary network	30 (96.77%)	11 (100%)	8 (100%)	49 (98%)
Scaling	16 (32%)	3 (6%)	2 (4%)	21 (42%)
Halo sign	3 (6%)	1 (2%)		4 (8%)
Folliculocentricity	6 (12%)	3 (6%)	1 (2%)	10 (20%)
Invasion of hair follicle	4 (8%)	4 (8%)	1 (2%)	9 (18%)

Table 2: Histopathological features in Pityriasis Versicolor

Histopathological feature	Hypopigmented variant (31)	Hyperpigmented variant (11)	Mixed variant (8)	Total (50)
Perivascular infiltrate	27 (54%)	10 (20%)	2 (4%)	39 (78%)
Hyperkeratosis	19 (38%)	10 (20%)	2 (4%)	31 (62%)
Presence of hyphae spores	10 (20%)	8 (16%)	2 (4%)	20 (40%)
Spongiosis	10 (20%)	9 (18%)	2 (4%)	21 (42%)
Special stain	9 (18%)	9 (18%)	2 (4%)	20 (40%)

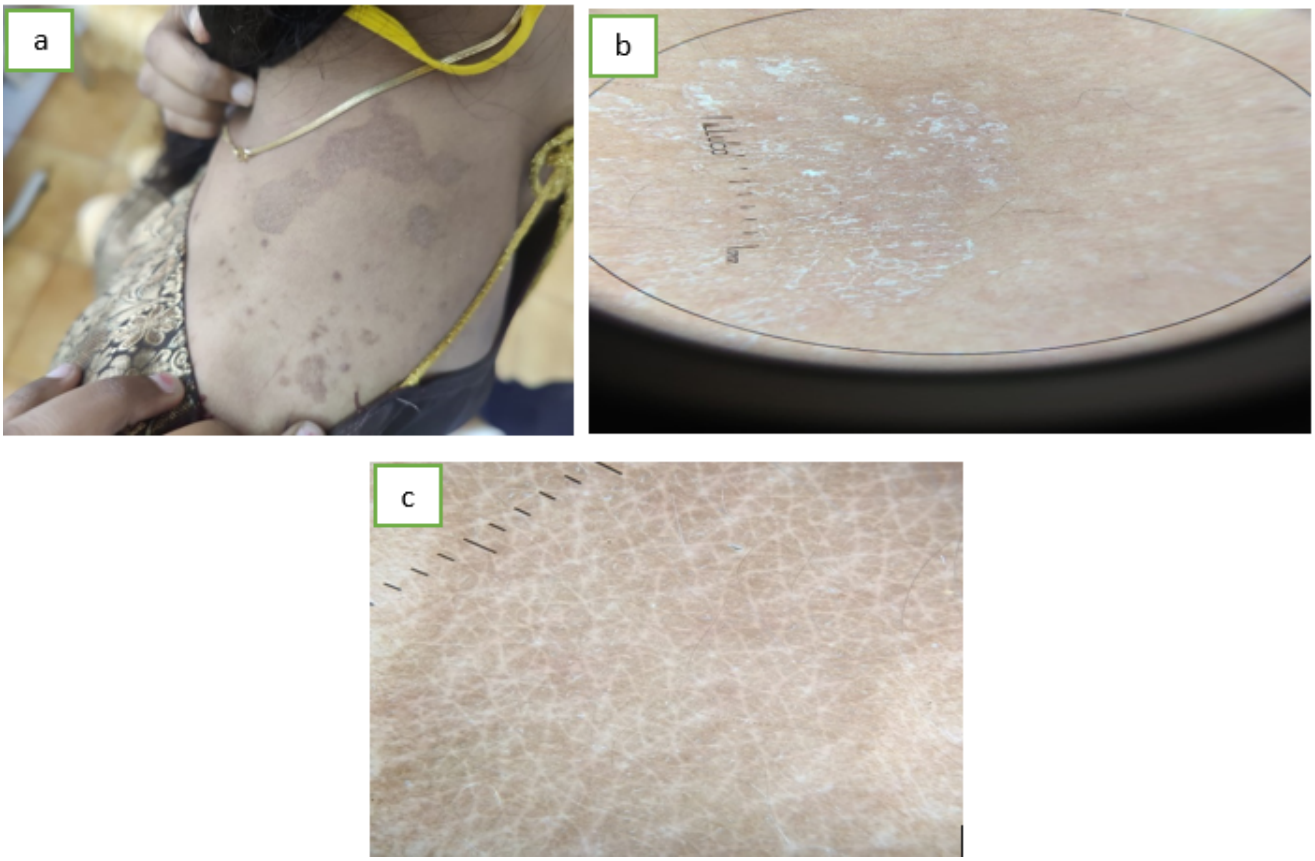

Fig. 1: Mixed variety of Pityriasis versicolor; **a:** Adult patient showing mixed variety of Pityriasis versicolor involving upper back/shoulder; **b:** Showing scaling at the centre of the lesion; **c:** Showing altered pigmentary network.

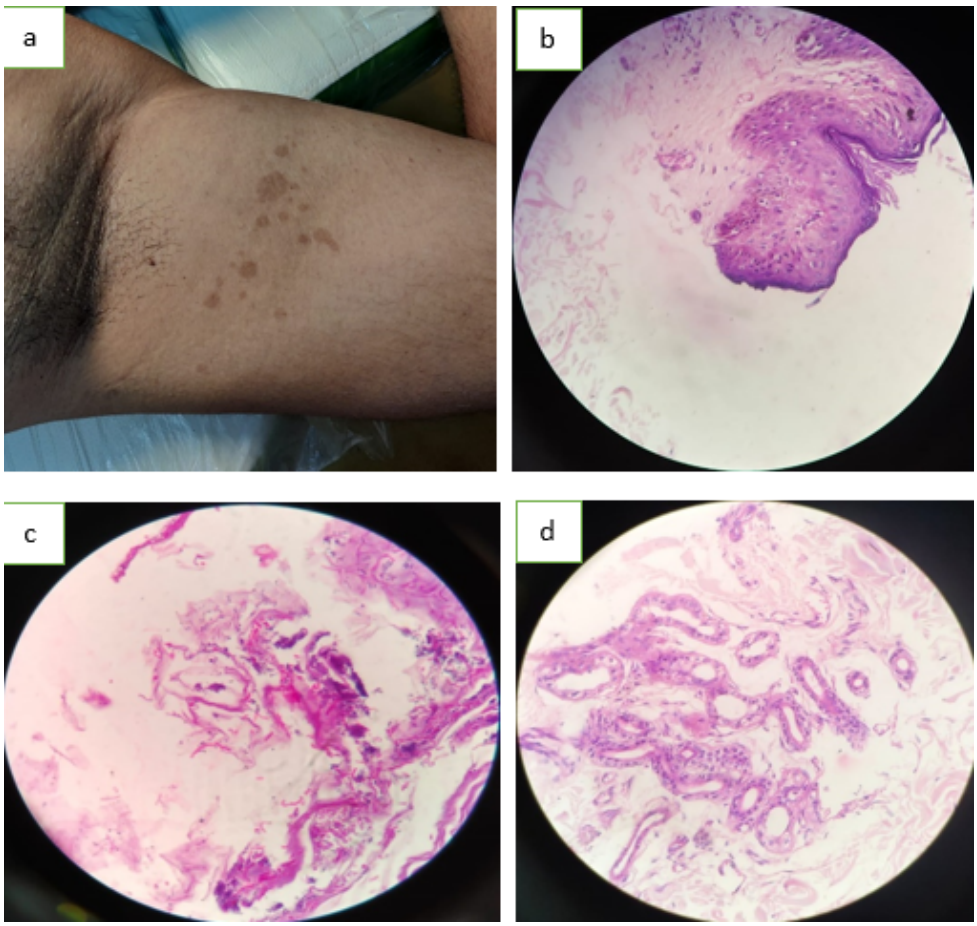

Fig. 2: Hyperpigmented pityriasis versicolor; **a:** Adult patient with hyperpigmented variant of pityriasis versicolor involving upper arm; **b:** Showing spongiosis on histopathology. (40x magnification); **c:** Showing fungal elements displaying spaghetti and meatball appearance on histopathology. (40x magnification); **d:** Showing perivascular infiltration on histopathology. (40x magnification)

these findings with electron microscopy are required to substantiate the findings.

6. Limitations

Smaller sample size was the limitation of our study.

7. Source of Funding

None.

8. Conflicts of Interest

There is no conflict of interest.

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