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Rotundiform morphology during the first episode of pityriasis versicolor – a retrospective case-control study on a distinct clinical presentation

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Abstract

We report a retrospective case-control study to investigate whether the rotundiform variant of pityriasis versicolor (PV) is significantly associated with the first episodes of PV. Our setting was a dermatology clinic run by a consultant dermatologist. We retrieved medical records of all patients with PV between April 1, 2002 and March 31, 2005. We identified patients with lesions forming closed round circles. We excluded patients with uncertain diagnosis or diagnosis not substantiated by Wood's light examination or skin scrapings for potassium hydroxide examination. For each patient, we retrieved the medical record of the next patient of the same sex and similar age (± three years) with documented non-rotundiform PV and diagnosis substantiated by investigations as the control subject.

80 patients were diagnosed as having PV during the record retrieval period. 18 had clinical descriptions or clinical photographs documenting rotundiform PV. Five were excluded owing to uncertain diagnosis, unclear clinical descriptions, or diagnoses unsubstantiated by examination under Wood's light or skin scrapings for potassium hydroxide examination. 13 had definite diagnosis of rotundiform PV. Ten agreed to attend clinic. The response rate was 76.9%. Ten age-and-sex pair-matched control subjects with non-rotundiform PV were recruited. Nine patients with rotundiform PV and two controls with non-rotundiform PV had their episode of PV representing their first episode of PV ($p = 0.01$; OR = 36.0, 95% CI: 2.2 - 866.9). We conclude that rotundiform PV is significantly associated with the first episode of PV. This phenomenon might be analogous to the herald patch being the primary lesion in pityriasis rosea.

Introduction

Pityriasis versicolor (PV) is a common superficial fungal infection caused by a lipophilic, yeast-like fungus Malassezia furfur. It is characterised by multiple, discoloured, scaly lesions on areas with rich sebaceous gland distribution,[1] including the trunk, proximal extremities, neck, and face.[2] There are several clinical variants recognised namely, maculo or papulo-squamous, follicular, flexural (inverse),[3] hypopigmented, hyperpigmented, erythematous,[4] atrophic[5] and erythrasmoid[6]. Nine different species of M. furfur are recognised to be causing PV.

Predisposing factors include tropical climate, greasy skin, hyperhidrosis, hereditary background of PV, systemic corticosteroid treatment, and immunodeficiencies.[1] The association of PV with seborrhoea and seborrheic dermatitis is well-known. The occurrence of PV has been noted frequently in the patients with chronic alcoholism.[1]

We have previously observed that certain patients with the first episode of PV might present with the rotundiform variant. Whether such association is significant or just coincidental is unknown. This phenomenon might be analogous to the herald patch being the primary lesion in pityriasis rosea (PR). Investigating whether the rotundiform

variant signifies the first episode of PV is important for further understanding of the immunopathogenesis of PV. We present here a retrospective case-control study investigating such association.

Objective

Our objective was to investigate whether the rotundiform variant of PV is significantly associated with the first episodes of PV.

Method

Our setting was a dermatology clinic run by a consultant dermatologist. We searched our database with the entrez "pityriasis" and retrieved the medical records of all patients with a diagnosis of PV seen by us between April 1, 2002 and March 31, 2005. For all these records, we cross-checked from the clinical record and/or clinical photographs whether the lesions of PV formed closed round circles, and identified all patients with rotundiform PV. Patients were excluded if their diagnoses were uncertain, if the clinical descriptions were unclear, or if the diagnoses were not substantiated by examination under Wood's light or skin scrapings for potassium hydroxide examination.

For each patient with rotundiform PV, we retrieved the medical record of the next patient of the same sex and similar age (calendar age within three years) consulting us with documented non-rotundiform PV and diagnosis substantiated by investigations as the control subject.

We contacted the patients and control subjects by telephone and requested them to attend our surgery for follow-up. We interviewed them and inquired whether the patient had previous episodes of PV. We also showed clinical photographs of PV lesions to our patients and control subjects. We ascertained to our best effort whether the episode of rotundiform PV represented the first episode of PV.

Results

A total of 80 patients were diagnosed as having PV during the record retrieval period. Of such, 18 had clinical descriptions or clinical photographs documenting rotundiform PV. Five patients were excluded owing to uncertain diagnosis, unclear clinical descriptions, and diagnoses unsubstantiated by examination under Wood's light or skin scrapings for potassium hydroxide examination.

13 patients were found to have definite diagnosis of rotundiform PV. Three patients declined to attend the clinic again for the purpose of this study. Ten patients agreed to attend. The response rate was 76.9%. Six were males and four were females. The age range was three to 68 years. Summary of their clinical data is presented in Table 1. Clinical features of several patients are depicted in Figure 1a and Figures 2-5. Typical microscopy findings of a patient (patient 1) are shown in Figure 1b and typical Wood's light findings of the same patient in Figure 1c.

Ten control subjects with non-rotundiform PV were recruited. They were age-and-sex pair-matched with the recruited patients. Six were males and four were females. The age range was five to 65 years. All agreed to attend the clinic for this study. The response rate for control subjects was 100%. Summary of their clinical data is presented in Table 2.

Nine patients with rotundiform PV were found to have their episode of rotundiform PV representing their first episode of PV. In contrast, only two patients with non-rotundiform PV were found to have their episode of non-rotundiform PV representing their first episode of PV. Two tailed $p = 0.01$ (Fisher's exact probability test). OR = 36.0 (95% CI: 2.2 - 866.9).

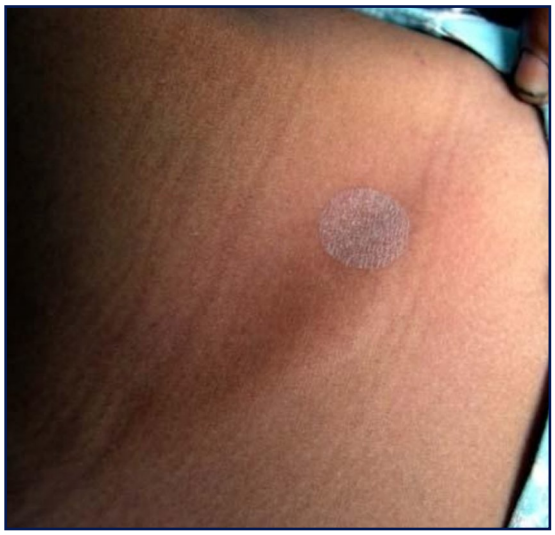

Fig. 1a

A solitary, perfectly circular, scaly lesion of 2 cm diameter with non-inflammatory border on the left shoulder of patient 1.

Fig. 1b

Wood's lamp examination of the patient 1 showed a bright yellow fluorescence.

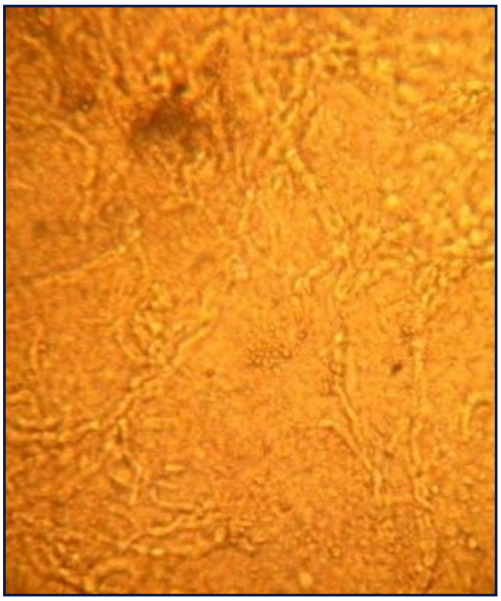

Fig. 1c
Potassium hydroxide preparation of the skin scrapings revealed "meat-ball spaghetti" appearance.

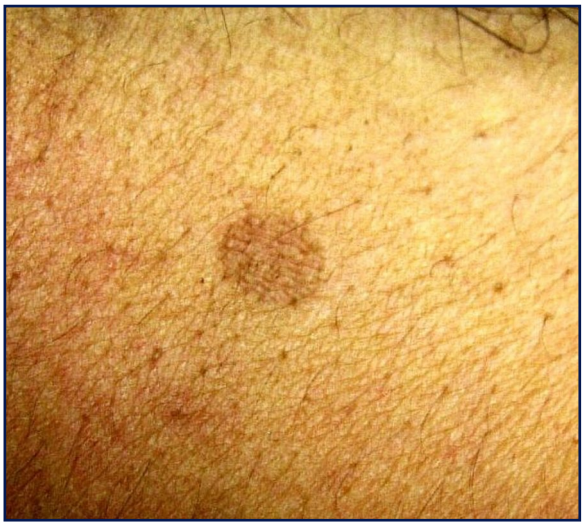

Fig. 4
Hyperpigmented, oval to circular lesion of PV along the right axilla of patient 5.

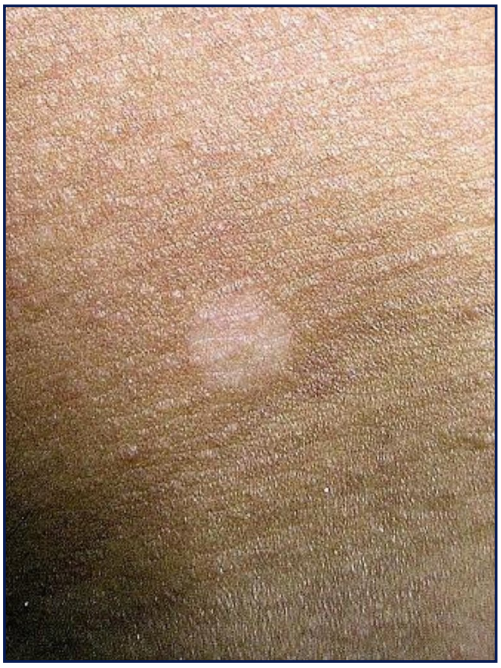

Fig. 2
A geometrically circular, hypopigmented scaly macule on a non-inflammatory base on the left side of neck of patient 3.

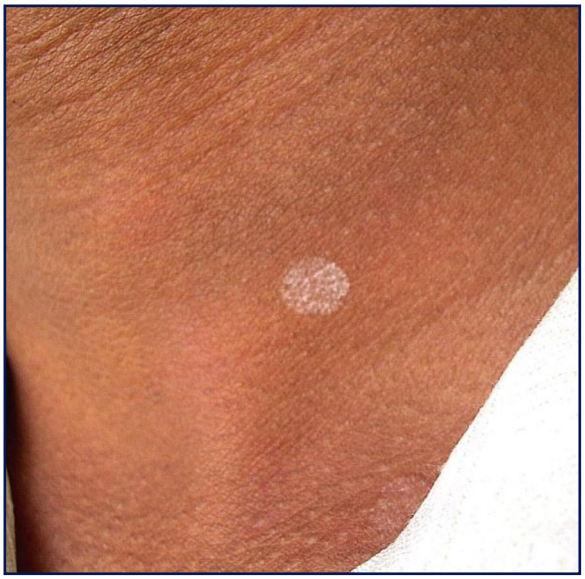

Fig. 5
A circular hypopigmented, scaly lesion on the left side of neck of patient 8.

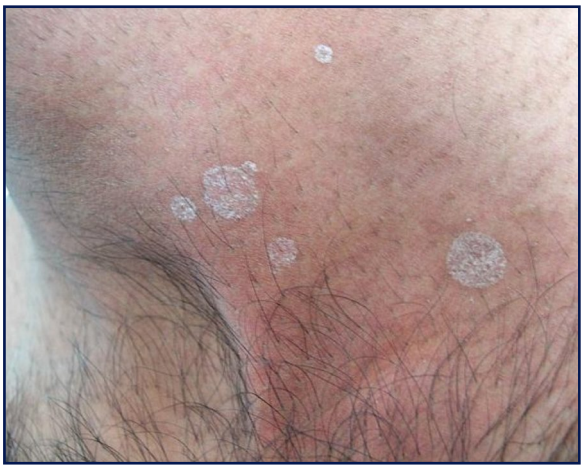

Fig. 3
Multiple circular lesions on the left supraclavicular area of patient 4.

Discussion

In our earlier study of 500 patients with PV,[8] we have noted several patients with geometrically circular lesions at the first instance of the disease. There are only three isolated cases in the indexed literature the world over. We have now identified ten other patients with such variant. However, such large series of rotundiform PV has not been published so far to the best of our knowledge. Thus, we believe that rotundiform PV may not be as infrequent as it appears from those published reports. Such variant might be underdiagnosed or misdiagnosed.

We found from our analysis that rotundiform PV is significantly associated with the first episode of PV. The underlying mechanism for such association is unknown. It is also unknown whether such morphological pattern is

more frequent in Indian patients or whether it also exists in patients of other ethnic origins with similar increasing frequency and remaining under-reported. Hence, it would be interesting to know the further status of rotundiform morphology of PV in other geographical areas. Larger multi-centre studies will obviously be required to study these aspects in depth.

The cause of the characteristic circular morphology, however, is unexplained in our patients. It remains unknown whether a specific growth pattern of the fungus on the superficial layers of epidermis or evocation of its immune response on the skin surface, especially in the early lesions of PV, is responsible for such curious morphological pattern.

We postulate that rotundiform PV might be analogous to the herald patch in PR. We have previously investigated the viral pathogenesis[9-11] and immunopathogenesis[12] of PR. We believe that the herald patch represents the primary inoculation site in the absence of pre-existing cell-mediated immunity to the offending virus/viruses, while the secondary lesions represent the second phase of viraemia in the presence of adequate cell-mediated immunity. Whether such hypothesis is applicable to rotundiform and non-rotundiform PV is yet to be explored.

Table 1

Clinical data of ten patients with rotundiform pityriasis versicolor

	Sex	Age	Number and sites of lesions	Findings under Wood's light	Microscopy findings on potassium hydroxide preparations	First episode of pityriasis versicolor	Predisposing factors and co-morbidities	Treatment given
Patient 1	F	20	One, left shoulder	Golden-yellow fluorescence	Meat-ball spaghetti appearance	+	Hyperhidrosis, seborrhoeic dermatitis	Ketoconazole tablet and shampoo.
Patient 2	M	25	Two, back	Golden-yellow fluorescence	Meat-ball spaghetti appearance	+	Genital scabies	Not received
Patient 3	F	48	One, left side of neck	Golden-yellow fluorescence	Meat-ball spaghetti appearance	+	Chronic eczema	Miconazole cream
Patient 4	M	25	Multiple, left supraclavicular area	Golden-yellow fluorescence	Meat-ball spaghetti appearance	+	Nil	Clotrimazole cream
Patient 5	M	35	Three, axillae	Golden-yellow fluorescence	Meat-ball spaghetti appearance	+	Nil	Not received
Patient 6	M	23	One, left infrascapular area	Golden-yellow fluorescence	Meat-ball spaghetti appearance	+	Nil	Not received
Patient 7	M	68	Multiple, neck	Golden-yellow fluorescence	Meat-ball spaghetti appearance	+	Alcoholism	Itraconazole tablets
Patient 8	M	40	Multiple, neck & shoulders	Golden-yellow fluorescence	Meat-ball spaghetti appearance	+	Nil	Oral Fluconazole, topical miconazole
Patient 9	F	3	One, neck	Golden-yellow fluorescence	Meat-ball spaghetti appearance	+	Nil	Ketoconazole topical
Patient 10	F	15	Multiple, trunk and face	Golden-yellow fluorescence	Meat-ball spaghetti appearance	—	Pityriasis capitis	Oral Itraconazole, topical miconazole

Table 2

Clinical data of ten age-and-sex pair-matched control subjects with non-rotundiform pityriasis versicolor

	Sex	Age	Number and sites of lesions	Findings under Wood's light	Microscopy findings on potassium hydroxide preparations	First episode of pityriasis versicolor	Predisposing factors and co-morbidities	Treatment given and response
Control subject 1	F	20	Multiple, posterior trunk	Golden-yellow fluorescence	Meat-ball spaghetti appearance	—	Seborrhoeic dermatitis	Systemic fluconazole & miconazole cream
Control subject 2	M	27	Multiple, anterior trunk	Golden-yellow fluorescence	Meat-ball spaghetti appearance	+	Nil	Selenium sulphide topically
Control subject 3	F	46	Three, shoulders	Golden-yellow fluorescence	Meat-ball spaghetti appearance	—	Nil	Miconazole cream
Control subject 4	M	23	One, nape of neck	Golden-yellow fluorescence	Meat-ball spaghetti appearance	—	Nil	Clotrimazole cream
Control subject 5	M	35	Multiple, Supraclavicular & presternal areas	Golden-yellow fluorescence	Meat-ball spaghetti appearance	—	Diabetes mellitus	Itraconazole tablets
Control subject 6	M	21	Multiple, Bilateral axillae	Golden-yellow fluorescence	Meat-ball spaghetti appearance	—	Intermittent systemic corticosteroid therapy for asthma	Itraconazole tablets
Control subject 7	M	65	Multiple, face & neck	Golden-yellow fluorescence	Meat-ball spaghetti appearance	—	Diabetes, lichen amyloidosis	Itraconazole tablets
Control subject 8	M	42	Multiple, anterior trunk & axillae	Golden-yellow fluorescence	Meat-ball spaghetti appearance	—	Hyperhidrosis	Oral Fluconazole, topical miconazole
Control subject 9	F	5	One, left cheek	Golden-yellow fluorescence	Meat-ball spaghetti appearance	—	Atopic dermatitis	Miconazole cream
Control subject 10	F	15	Multiple, both axillae	Golden-yellow fluorescence	Meat-ball spaghetti appearance	+	Vesicular eczema of hands	Oral Fluconazole, topical miconazole

We have previously established and validated a set of diagnostic criteria for PR.[13] Herald patch is an optional criteria in our list - its absence does not exclude PR. We believe that this also holds true for rotundiform PR - although some patients might have had rotundiform PV before non-rotundiform PV, the absence of the rotundiform morphological stage does not affect the diagnosis of PV.

A significant limitation in our study is that owing to the constraints in resources and the retrospective nature, skin scrapings for culture and species identification and lesional biopsies were not performed. The number of patients and control subjects is also relatively small. Larger studies incorporating in depth laboratory investigations would be necessary to confirm our results. Another limitation is that we could only give a best judgement from the history supplied by the patient and from our clinical record as to whether the rotundiform or non-rotundiform PV represents their first episode of PV. Recall bias and sampling bias thus exist.

Conclusion

We conclude that rotundiform PV is significantly associated with the first episode of PV. This phenomenon might be analogous to the herald patch being the primary lesion in pityriasis rosea.

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