

## Egyptian Dermatology Online Journal

### Volume 11 Number 2

#### **A Clinico-Pathological Study of Pityriasis Rosea**

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**Egyptian Dermatology Online Journal 11 (2): 5, December 2015**

#### **Abstract**

Background: Pityriasis rosea (PR), a common dermatological condition of unknown etiology, affecting all ages. Aims: To study clinical and histopathological features of PR. Methods: A total 50 patients from our outpatient department with clinicopathological diagnosis of PR were studied over a period of 10 months from March 2014 to December 2014. In each patient, diagnosis was made on clinico-pathological correlation. Various clinical and histopathological features were analyzed. Results: The average age at onset of the disease was 27 years, male: female ratio was 1.5: 1, and the average disease duration was 2 months. Most cases were asymptomatic. Clinically, the most common presentation was the classical PR with unusual features in 8 cases. Histologically, no unusual features were seen except in two cases of purpuric and vesicular PR. Conclusion: PR can present with variable clinical features. Histopathology may help to achieve a correct diagnosis in doubtful cases.

#### **Introduction**

Pityriasis rosea (PR) is a common, benign skin condition. Exact etiology is not known. A number of clinical variants have been classified. PR has varied morphological presentations and may pose a diagnostic challenge in some cases [1]. Skin biopsy is of vital importance to make the correct diagnosis and treatment in such cases. We studied 50 patients of PR over a period of 10 months.

#### **Aim of the work**

The aim of the present study was to characterize various clinical presentations and histopathological variations of PR.

## Patients and Methods

A total of 50 patients of PR from our outpatient department, with or without any other skin disease were enrolled over a period of 10 months. All the patients were subjected to detailed history, clinical examination and skin biopsy after an informed consent. In each patient, the diagnosis was made based on clinico-pathological correlation. Clinical variables, such as age, sex, duration of disease, symptomatology, type of lesions, family history, distribution of lesions, previous treatments taken if any and previous clinical diagnosis were studied. Variables considered in histopathological examination included epidermal changes, pattern of infiltrate, type of infiltrate, vascular changes etc. Findings from all the patients were tabulated and analyzed to characterize various clinicopathological features of PR

## Results

### Clinical

An average age of disease onset was 37 years. The youngest patient was 5 year old while the oldest was 54 year old. Males were more commonly affected than females with a male female ratio of 1.5:1. An average duration of the disease was 6 weeks with the shortest duration being 4 weeks while the longest being 10 weeks. No recurrent PR was recorded.

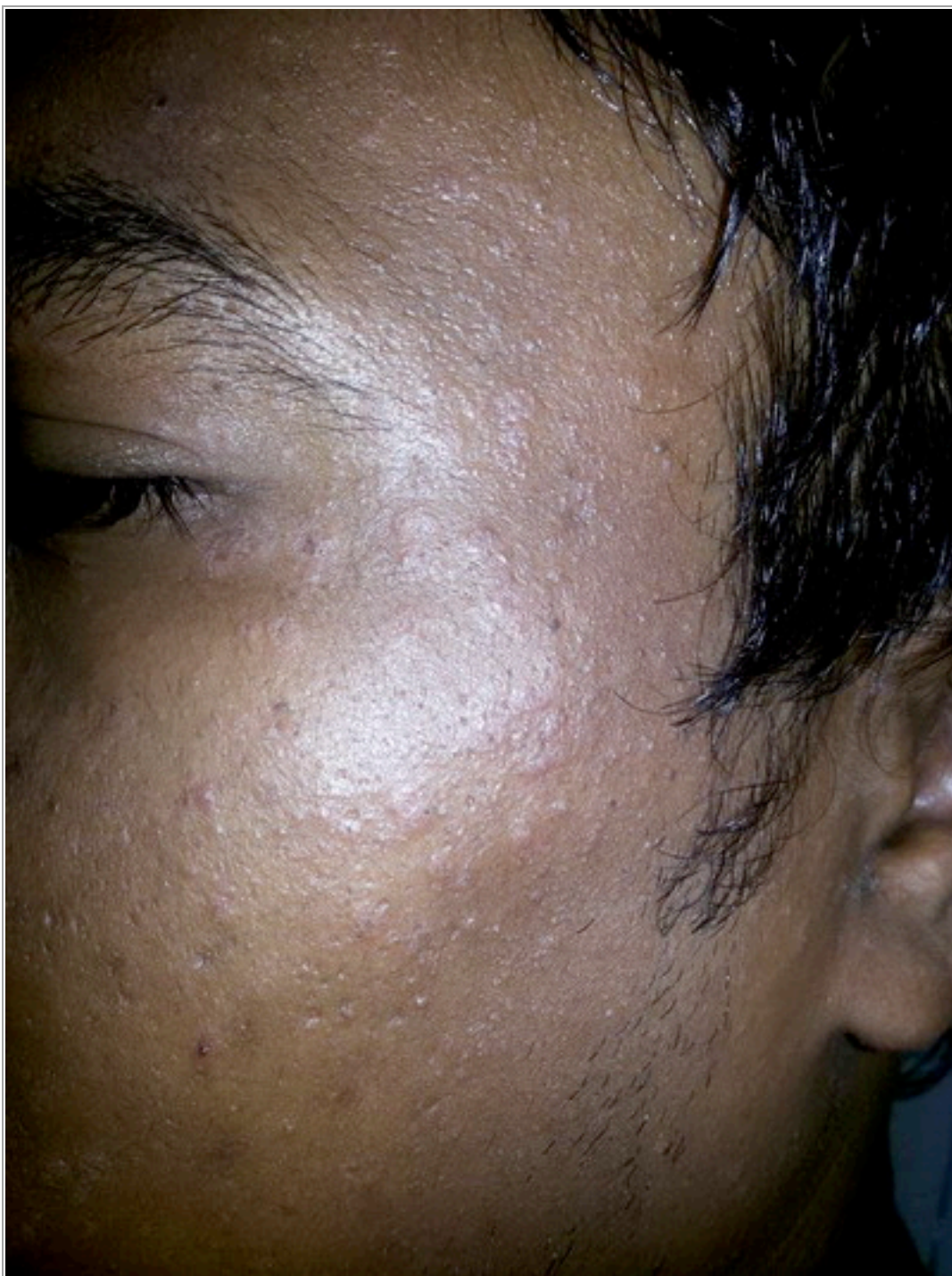
No other major associated skin disease was seen in any of the patient. No family history was noted in our study. Itching was the most common symptom (30%), though the majority of the patients were asymptomatic (60%). No history of drug intake was found in our study. Eighteen patients (36%) gave a history of upper respiratory tract infection 2weeks before the onset of the lesions while prodromal symptoms were found in 8 (16%) patients. History of Herald patch (HP) was found in 28 (56%) patients and annular plaques with collaret of scales were the most common type of lesions seen. The back was the most commonly affected site while involvement of the palms and soles was seen in 8 (16%) patients. **(Figure 1& 2)** Face was involved in 3 patients (6%) **(Figure 3)**, lips and prepuccial skin in 1 patient each (2%) **(Figure 4)**.



**Fig 1**



**Fig 2**



**Fig 3**

**Fig 4**

Purpuric PR (**Figure 5**) was seen in one case, clinically showing non-blanchable lesions with Diascopy. Vesicular PR (**Figure 6**) was seen in one case showing edematous papules and vesicles in typical PR pattern. Involvement of the proximal nail fold and web spaces with typical collaret of scales was seen in 6 cases. (**Figure 7**) while flexural involvement was seen in 3 cases. Two had annular lesion while one was papular PR.(**Figure 8**).

**Fig 5**



**Fig 6**



**Fig 7**

**Fig 8**

All the cases were treated with moisturizers, topical steroids and oral antihistamines for itching. . Oral erythromycin 500mg qid was given in 15 cases and oral acyclovir 800mg tds was given in 20 cases while 15 cases with milder disease were treated with only topical medicines. Short course of oral steroids was given to only one patient with vesicular PR. Clinical cure was almost the same in both groups treated with erythromycin and acyclovir.

Percentage of various types of PR and sites involved is shown in **table 1**.

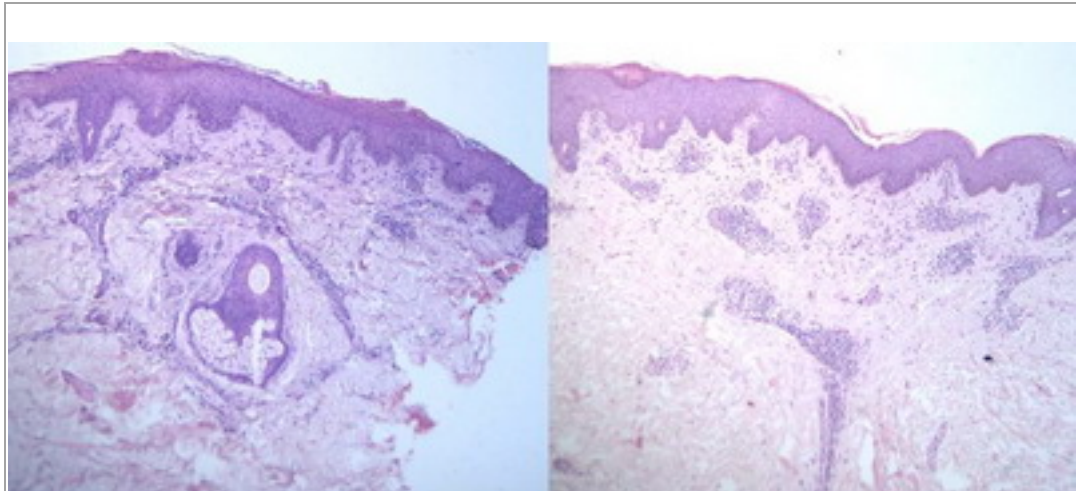
Type of PR	Number and Percentage	Sites involved	Number and Percentage
Classic PR	40 (80%)	Back	45 (90%)
Papular PR	5 (10%)	Upper limbs	42 (94%)
Vesicular PR	1 (2%)	Lower limbs	28 (56%)
Purpuric PR	1 (2%)	Palms & soles	8 (16%)
Inverse PR	3 (6%)	Face	3 (6%)
Lichenoid	0 (0%)	Lips & prepuce	1 (2%)

**Table-1: Percentage of various types of PR and various sites involved**

### Histopathological

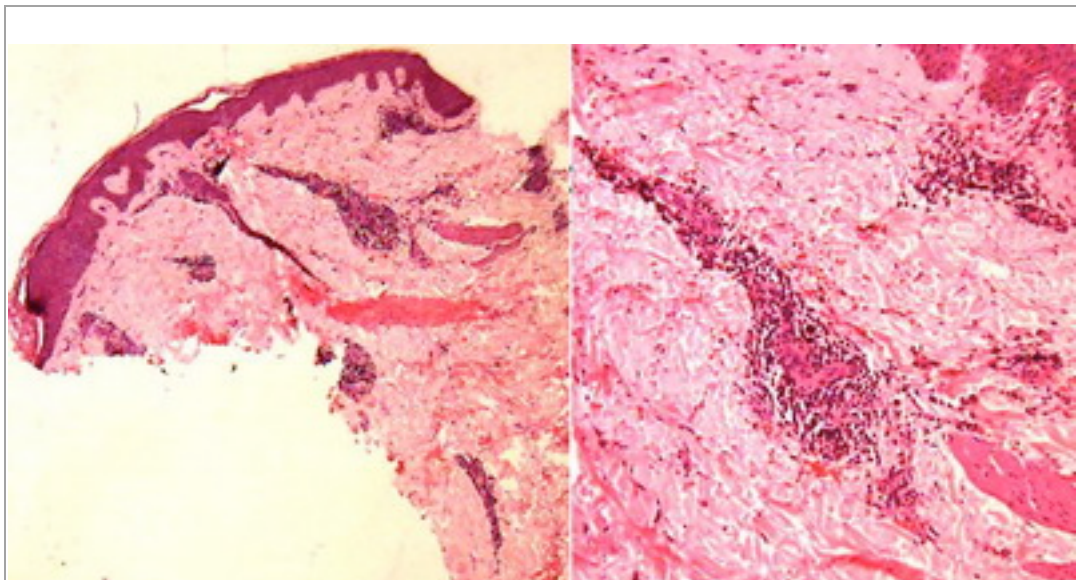
The majority of cases showed classical histopathological findings which were sufficient to make diagnosis of PR on clinicopathological correlation.

Parakeratosis with parakeratotic mounds, spongiosis, mild to moderate acanthosis, superficial perivascular lymphocytic infiltrate with extravasation of red blood cells (RBCs) and mild dermal edema were the most common findings. (**Figure 9**).

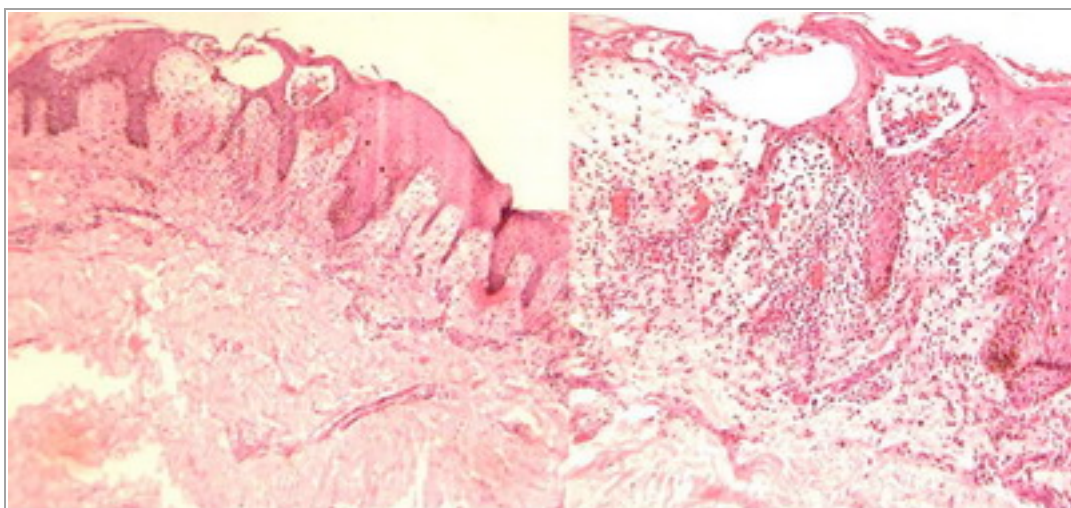


**Fig 9**

Severe extravasation of RBCs was seen in purpuric PR (**Figure 10**) and severe spongiosis with dermal edema was seen in vesicular PR (**Figure 11**).



**Fig 10**



**Fig 11**

Various histopathological findings with their percentage are listed in **table 2**.

<b>Histopathological feature</b>	<b>Percentage of cases</b>
Parakeratosis	100%
Parakeratotic mounds	80%
acanthosis	90%
spongiosis	80%
Lymphocytic exocytosis	70%
Superficial perivascular infiltrate	95%
Papillary dermal edema	90%
Red cell extravasation	80%
Eosinophils infiltrate	20%
Dyskeratotic cells	20%
Multinucleate cells	0%
Apoptotic cells	0%
Acantholytic dyskeratosis	0%

**Table-2: Percentage of various histopathological findings**

We regret that owing to constraints in resources, we could not study any hematological parameters and immunohistochemical markers.

## Discussion

The PR is a self-limiting disease with sudden-onset and with specific skin rash and usually affects the children and adolescents [1].

PR does not have any predilection for sex and equally affects both of the genders [2]. However in our study males were affected more than females with the male-female ratio of 1.5/1. PR is known to have seasonal variation with high number of cases found in winter season probably because of increased incidence of throat infection at the same time. It may become epidemic in crowded living spaces such as school, family and workplaces [3]. History of throat infection was noted in 36% of patients in our study. History of throat infection was noted in 17.5% of patients in a study by Sharma et al [4]. Ozyurek et al., found throat infection in almost an equal male female ratio [5], but in many patients it may not be noted or may be subclinical.

The PR is sometimes observed in the areas of insect bite, minor skin infection, previous scars, injection sites or BCG vaccination, new, unwashed clothes or clothes held dirty for a long time suggested to be associated with the disease [4,6]. No such observation was made in our study.

Prodromal symptoms are usually rare but occasionally findings such as fever, headache, throat pain, abdominal pain, arthralgia, cough, vomiting and lymphadenopathy may be observed. Only 8 patients (16%) reported prodromal symptoms just before the onset of the rash in our study. Body aches and throat pain with mild hyperthermia were the most common prodromal symptoms. Ozyurek et al., reported a frequency of prodromal symptoms of 59.6% of patients in their study and suggested that the higher rate supports the role of viral etiology of PR [5].

Frequency of HP ranges between 40% and 76% amongst various studies. It was 56% in our study. A study by Ozyurek et al., found it in 77% of patients [4,6]. The HP lesion were reddish brown with slight peeling of the skin. The most common site was the back followed by the abdomen, the chest and the extremities. The lesions were round or oval in shape, and the size varied from 2 to 6 cm. Secondary eruptions occurred within 10 days after HP in 62.5% of the patients in the study of Sharma et al. [4] and 87.5% of the patients in study by Ozyurek et al., [5] while it was reported in 72% of the patients in our study. We did not found multiple HPs in our study. Sharma et al found up to 3 HPs in some patients [4].

Itching was the most common symptom in our study. It was moderate in the majority of cases and very few patients needed antihistamines. None of patient reported any aggravating factor for itching. Sharma et al., found sunlight as one of the triggers for itching in their study [6].

Cases were maximum during the 4 months from September to December; and minimum from March to July. The highest number was seen in October (14 cases out of 50 cases). Similar seasonal variation has been observed by sharma et al., and Ayanlowo O et al., in their studies [4,7].

None of our patients gave a history of similar eruption in past and no recurrent PR was found in 6 months follow up in any patient. Sharma et al., found a past history of eruptions similar to those of PR in 5 patients with the longest duration of 2 years [4]. None of our patients had history of any other skin disease, though some studies have reported history of atopy in some patients. Regarding the family history of PR, our findings were similar to that of study by Sharma et al., with no family history of similar lesions [4].

The distribution of lesions was bilateral and almost symmetrical with long axis along the cleavage lines in all cases except one case showing predominantly left sided lesions. The trunk was the commonest site followed by extremities. Inverse type lesions were seen in five patients with predominant flexural involvement. No giant PR was seen. Palmo-plantar involvement was seen in 8 (16%), face in 3 (3%) and mucosal involvement (lips and prepuccial skin) in 1 patient.

The size of the secondary eruptions lesions varied from 0.5 to 4 cm. Most were slightly erythematous to light brown, multiple, discrete, oval (96%) plaques with fine and dry scales in center and collaret at the periphery. The lesions were papular in 1 patient and vesicular in one. Follicular or targetoid lesions were not seen in our study while Sharma et al., found them in 1 patient each [4].

Histopathological features of PR are not specific and findings are variable depending on the stage of the lesions in evolution. In this study we tried to find some common and consistent histopathological features of PR. Different studies have shown different findings ranging from eczematous change in early lesion to parapsoriasis en plaque-like changes in late lesions [4,5,8].

Parakeratosis was the most consistent finding in our study with 100% occurrence, followed by superficial lymphocytic infiltrate (95%). Okamoto et al. conducted a study in 29 patients with PR, and found perivascular lymphocytic infiltration in all biopsy materials followed by erythrocyte extravasation in 66% of biopsy materials [9].

We found erythrocyte extravasation in 80% of the biopsies.

Acanthosis was seen in 90% of cases, papillary dermal edema in 90% of cases, Spongiosis was seen in 80% of cases while lymphocytic exocytosis in 70% of cases in our study. These findings are comparable with a study by Panizzon et al., who evaluated 62 biopsies and the main characteristic feature found was eczematous manifestation [10].

Similar rates were reported in a study by Aiba et al., but the study sample was too small [8]. Ozyurek et al., have debated about role of cellular immunity in pathogenesis of PR [4] based on features like exocytosis of lymphocytes, dyskeratotic cells in significant number of cases suggests a possible interaction between epidermal components and dermal mononuclear cells in the pathogenesis of PR. Also dyskeratotic cells signify basal layer damage. Moreover, erythrocyte extravasation in large number of biopsies in most of the studies supports the concept of dermal vascular damage [4,7,8,9]. In our study, also lymphocytic exocytosis,

dyskeratotic cells and erythrocyte extravasation along with perivascular lymphocytic infiltrate and dermal edema were seen in most cases and we also feel that cellular immunity is of importance in pathogenesis of PR.

In our study, severe extravasation of erythrocytes with clinically purpuric lesions was seen in one case. Also severe spongiosis and exocytosis with intra-epidermal vesicles with vesicular lesion clinically was seen in one case.

We could not do any immunohistochemical markers due to economic constraints but many studies have proven the inflammatory infiltrate to be of T cell origin with positive staining for CD3 marker and negative for CD20, a marker for B cell. [4,7,9,10]. These findings supports the speculation that PR is associated with cellular immunity rather than humoral immunity.

In our study, observation of perivascular lymphocytic infiltration, lymphocytic exocytosis, focal parakeratosis, parakeratotic mounds, irregular acanthosis and spongiosis and superficial dermal edema in more than half of our biopsy materials appear to support the eczema-like histopathologic features of PR.

We suggest that the above mentioned histopathological features can be used reliably for diagnosis of PR in presence of clinical criteria given by Zawar et al [11].

## Conclusion

PR is a mild eczematous dermatosis, occurring in winter mostly, probably triggered by infection and remitting within around 8 weeks.

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