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Original Article

Pityriasis lichenoides is an immune reactionary self-limiting benign disease

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Abstract

Objective Pityriasis ichenoides consists of Pityriasis Lichenoides et Varioliformis Acuta and Pityriasis Lichenoides Chronica. It might resolve spontaneously and without important sequelae such as lymphoma. This study aims to evaluate the demographic and clinical pictures of both types of pityriasis lichenoides.

Methods This is a clinical descriptive study on a long-term basis, in which patients with a clinical picture of pityriasis lichenoides were collected during the period between 2012 and 2020. Any triggering factors before the onset of the disease were noted and biopsies for histopathological evaluation were carried out.

Results Fifty-six patients with pityriasis lichenoides were evaluated; no obvious triggering factors were elucidated in both types. The acute form consisted of 16 (80%) males and 4 (20%) females. Their age range was from 5 to30 years with a median of around 17years. All presented with acute generalized erythematous necrotic lesions with burning and itching, simulating chicken pox that left hyperpigmentation after recovery. The chronic form consisted of 36 cases. Their age range was from 3 to 12 years with a median of 7 years; 31 (86%) were males and 5 (13.8%) were females. All cases had a slow course of progression over months and years. Fourteen patients (38.8%) were seen with generalized non-itchy erythematous papules with mica-like scales whereas 24 (66.66%) presented with hypopigmented lesions.

Conclusion Both acute and chronic forms are self-limiting conditions that stay for weeks to years and remit spontaneously. They are considered as an immune reaction to specific triggering factors such as an infection.

Key words
Pityriasis lichenoides, PLEVA, PLC, immune reaction, triggering factors.

Introduction

Pityriasis lichenoides is not a single condition but presents as a range of subtypes that include pityriasis lichenoides et varioliformis acuta (PLEVA), febrile ulceronecrotic Mucha-Habermann disease and pityriasis lichenoides chronica (PLC).[1] Both acute and chronic pityriasis lichenoides, the opposing ends of this spectrum, are characterised by different disease courses with PLC developing slowly over an extended period whilst PLEVA generally presents as a sudden eruption of painful papules. These lesions generally occur in clusters, initially forming open sores, and can either form a red-brown crust, as in PLEVA, or go on to produce ulcers that are large and destructive, i.e. febrile ulceronecrotic Mucha-Habermann

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disease, which in its most severe forms may be fatal.[2,3] In contrast, patients with PLC often do not experience pain or irritation and generally experience periodic exacerbations and relapses.

Plasmacytoid dendritic cells (pDCs) circulate in the blood and make up less than 0.4% of peripheral blood mononuclear cells; their activation by viral infection results in the secretion of type 1 interferons.[4] These cells have recently been implicated in both types of pityriasis lichenoides as both conditions are characterised by high levels of type 1 interferons and by testing positive for pDC markers such as blood-derived dendritic cell antigen-2 (BDCA2).[5] Consequently, pDCs have been found to constitute a central component of the inflammatory infiltrate in pityriasis lichenoides.

The inflammatory infiltrate in PLEVA lesions contains cytotoxic suppressor T-cells, whilst in PLC, helper/ inducer T-cells are more prominent. Parvovirus B19 DNA has also been identified in cases of both PLC and PLEVA, although whether the presence of parvovirus is as a causative pathogen is yet to be determined.[6]

This supports the current theory that pityriasis lichenoides has an immune component, as do the various case reports that describe PLEVA development following influenza vaccination, measles vaccine and the subcutaneous administration of a human immunoglobulin which was used in the treatment of a primary immunodeficiency disease.[7-9] PLC is thought to be the result of hypersensitivity to pathogens including the Epstein-Barr virus herpes simplex virus, and there is a possible pathogenetic link between pityriasis lichenoides and chronic hepatitis C.[10-12] Whilst there are infectious components that may play a role in the development of PLC or PLEVA, the condition itself is not contagious.

A further study evaluated the immune-histochemical features of Pityriasis lichenoides including acute and chronic types and lesional T-cell subsets and the possible action of viral infection in its pathogenesis. It showed that lymphocytes expressing CD8 and T-cell intracellular antigen-1 were more plentiful in patients with PLEVA than with PLC, whereas CD4+ lymphocytes and FOXP3-positive regulatory T-cells were more common in PLC. HHV-8 DNA was present in 11/51 (21.6%) PL patients and negative in all controls.[13]

The histopathology of the two forms of Pityriasis lichenoides is distinct. In the acute form, i.e. PLEVA, the epidermis revealed intercellular and intracellular oedema, focal necrosis and, occasional neutrophils in the cornified layer. There has been pronounced perivascular and diffuse infiltrates in the dermis, consisting mainly of mononuclear cells, extravasation and diffusion of erythrocytes into the epidermis. The vascular changes comprised of endothelial swelling and haemorrhage, with small fibrin deposition within vessel walls. The chronic form, PLC had characteristic features including interface dermatitis in all stages of the lesions. Lymphocytes and histiocytes, melanophages and extravasated erythrocytes were the cells most commonly observed. Focal mild parakeratosis was occasionally seen. Serological, epidemiological and therapeutic evidences suggested that PLEVA might be the result of hypersensitivity reaction to an infectious agent, although a specific agent was not isolated with reproducible results in patients with PLEVA. Lymphoma as a complication of PL is rarely seen even though it could be a coincidental finding.[13-17]

The objective of the present work is to gather all cases of pityriasis lichenoides that were seen during the period between 2012 and 2020 and to do a full clinical and histopathological evaluation.

Patients and methods

In this descriptive case series, all patients with the clinical picture of pityriasis lichenoides were collected during the period of 2012–2020, and their demographic features, i.e. age, sex, family history of the disease, progression and course of the disease, were recorded and analysed. All cases were assessed for any triggering factors such as infection or drug intake before the onset of the disease. Biopsies for histopathological confirmation were carried out to support the clinical diagnosis. Follow up was carried out for 2–4 months as part of the management. Formal consent was taken from all patients after explanation of the nature and course of the disease. All patients agreed to share their photos in the present work. This study was approved by the Scientific Ethics Committee of the College of Medicine.

Results

The total number of patients with pityriasis lichenoides that were seen during this specific time were 56. Their ages ranged from 3 to 30 years with a mean±SD of 17±5 years; 47 (83.9%) were male and 9 (10%) female. The total number of patients with the acute form, i.e. PLEVA were 20 (35.7%) however 36 (64.2%) had the chronic form, i.e. PLC. No patients documented any preceding obvious triggering factors, e.g. fever, cough or drug intake. No other family members had a similar condition. The acute form consisted of 16 (80%) males and 4 (20%) females, their ages ranging from 5 to 30 years with a median of around 17 years. All presented with acute generalized erythematous papules and plaques that rapidly became vesicular and then dusky necrotic lesions simulating chicken pox **(Figures 1,2)**. The duration of the disease ranged from several weeks to several months and, on healing, left pigmented macules. In addition, patients had complained of burning sensation and occasional itching during early course of the disease. The histopathology of this acute form showed a marked inflammatory reaction of both epidermis and dermis. The epidermis was acanthotic with parakeratosis and spongiosis with lymphocytic exocytosis. Necrosis of keratinocytes was also seen. The dermis showed severe superficial and deep lymphocytic infiltrate with oedema and extravasated red blood cells. Marked interface dermatitis of the dermoepidermal junction was also observed **(Figure 3)**. The chronic form consisted of 36 cases; their ages ranged from 3-12 years with a median age of 7 years. 31 (86%) were male and 5 (13.8%), female. All cases had a chronic course of progression over several months to years, but all had erythematous red papules during the early phase of the disease.

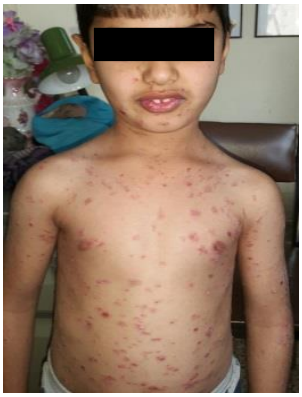
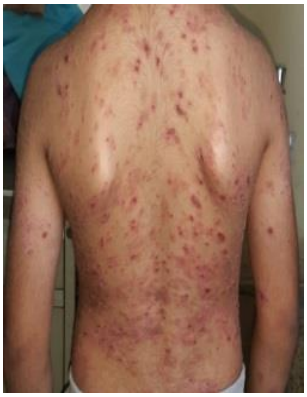

Figure 1 a,b showing six-year male child with acute pityriasis lichenoides. The rash constitutes papulo-necrotic papules and plaques.

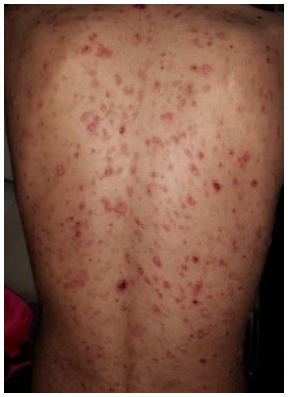
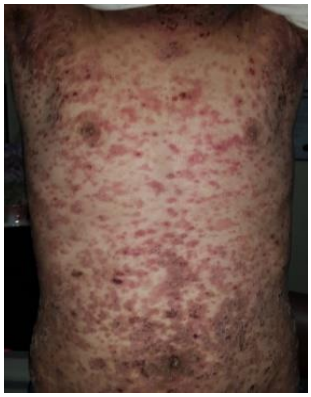

Figure 2 a,b showing fifteen years male patient of acute pityriasis lichenoides with severe necrotic papules and plaques involving the trunk.

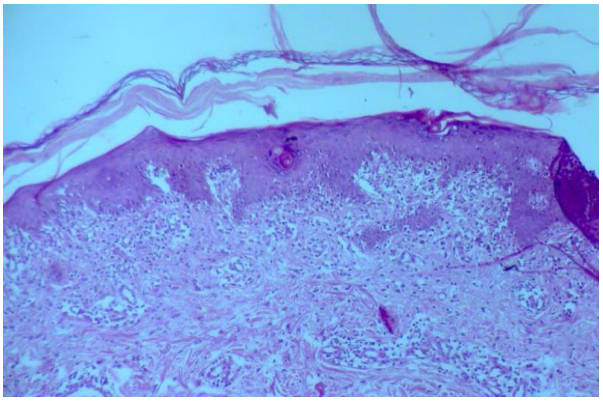

Figure 3 Histopathology of acute pityriasis lichenoides showing mainly acanthosis with lymphocytic cell infiltrate of epidermis together with interface dermatitis with marked superficial and deep lymphocytic cell infiltrate of the dermis (x10) (HE stain).

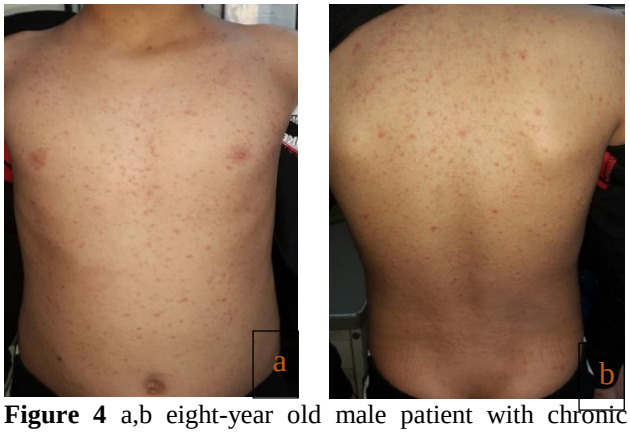

Figure 4 a,b eight-year old male patient with chronic pityriasis lichenoides showing erythematous papules over the trunk, some covered with mica like scale

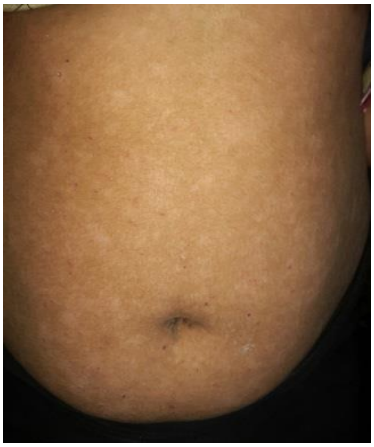

Figure 5 Seven-year old male with chronic pityriasis lichenoides showing whitish macules involving the trunk area with scattered dusky red papules covered with mica like scales.

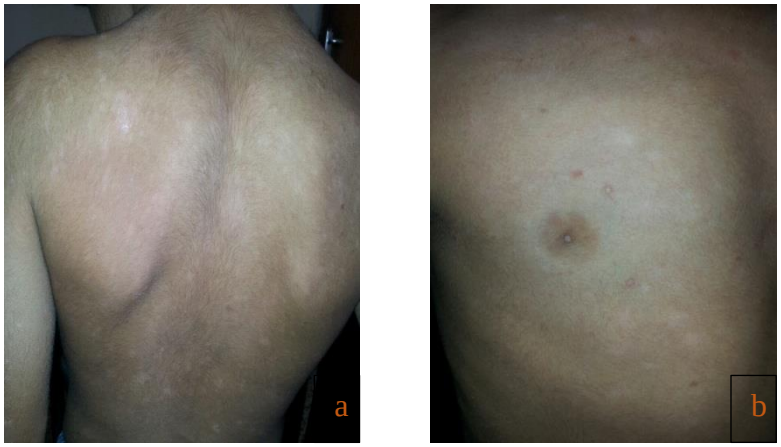

Figure 6 a,b six-year old male patient with chronic pityriasis lichenoides showing leukodermic macules and patches over trunk with few mica like scales.

In addition, none of the patients had any complaints apart from the rash. However, at the time of consultation, 14 patients (38.8%) had non-itchy generalized erythematous papules with mica like scales affecting mainly trunk, limbs and face **(Figure 4)**. In contrast, 24 patients (66.66%) presented with leukodermic macules, simulating vitiligo **(Figure 5&6)**, with few red papules covered with mica like scales. All cases were asymptomatic apart from the rash. No complications were detected in any of the patients during monthly follow ups.

Histopathology of the chronic form depends on the phase of the disease whether there were papular lesions or hypopigmented macules. The papular lesions showed a picture similar to the acute form but less florid and intense. There was mainly acanthosis of the epidermis with focal parakeratosis and mild to moderate superficial and deep lymphocytic cell infiltrate of the dermis with mild damage to the dermoepidermal junction **(Figure 7)**.

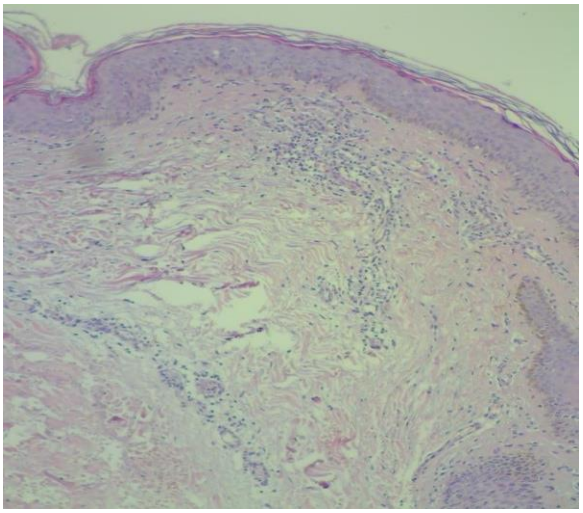

Figure 7 Histopathology of chronic pityriasis lichenoides showing mainly acanthosis of the epidermis and superficial and deep perivascular lymphocytic cell infiltrate (x10) (HE stain).

Discussion

Pityriasis lichenoides seems not to be a rare disease in Iraqi population and was found to be as common as in India.[17] The aetiopathogenesis is not well elucidated but there is some evidence suggesting that it could be an immune reaction to infections especially viral ones. However, other thoughts have been discussed to explain its cause, e.g. a relatively benign form of T-cell lymphoproliferative disorder or an immune complex-mediated hypersensitivity vasculitis.[17,18] Accordingly, following our results and reviewing the published literature, it can be concluded that this disease is an immune reactionary self-limiting benign disease rather than dyscrasia of lymphocytes since lymphoma is rarely registered and could be coincidental as the disease is running a chronic course.[16]

Pityriasis lichenoides includes two subtypes, the acute form, i.e. pityriasis lichenoides et varioliformis acuta (PLEVA) and the chronic one, pityriasis lichenoides chronica.

The frequency of this disease amongst the general population has not been documented, only being reported as a rare disease. The clinical observations of the present study showed that this disease is not an uncommon skin problem and that the chronic form was more common (64.2%) than the acute (35.7%) type. Both types were more common amongst males and this observation had been documented in the previous Indian study.[17]

In the present study, the clinical picture of the acute form was similar to published findings as it is a disease of adult males and it presents as an acute manifestation.[1-3] In early cases, it is often chicken pox-like, but after several weeks to months, the disease resolves leaving pigmented spots, or rarely chicken pox-like scars.[17-18]

The chronic form was also a disease of young male children and this was comparable to what has been reported. However, the clinical presentation was very surprising as two third (66.66%) of the cases were seen with hypopigmented and leukodermic discolouration with few erythematous rashes. Parents of patients were often asking about vitiligo. This interesting finding was not documented in the published studies. This pigment loss could only be explained on the basis of post-inflammatory sequelae as none of the patients had any personal or family history of vitiligo.[17,18]

Regarding the prognosis of the disease, it seems to be very encouraging as it is self-limiting in both the acute and chronic forms. However, in the chronic form, it might run several months to several years before complete resolution. This medical problem was not documented in adult life. No complications were seen in both the conditions although lymphoma is rarely documented but could be coincidental rather than an active part of the disease.[16,18]

Conclusion

The results of the present study support the

hypothesis that pityriasis lichenoides is an immune reactionary self-limiting benign disease and only needs supportive therapy and reassurance. The chronic part of pityriasis lichenoides constitutes around two-thirds of the patients. The acute form is a disease of young adult males and presents initially as chicken pox-like whilst the chronic one is a disease of young male children and commonly manifests as hypopigmented macules admixed with erythematous papules that were covered by mica like scales on top of the rash.

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