

Hyperpigmented patches on the back: a clinicopathological study from Iran

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Background: The description on patients with pigmented back patches is rarely reported in the literature. We decided to study the clinicopathological aspects of these patients for reaching a better understanding of this disease.

Method: In this study, the clinicopathological aspects and probable responsible factors in the manifestation of posterior pruritic pigmented patches in patients referred to the dermatology clinic of Qaem University Hospital from October 2007 to September 2009 were surveyed.

Result: All 60 patients who were enrolled in our study were female with a mean age of 31.43 ± 9.71 years. Six patients did not consent to biopsy. The most common finding in pathological examination of the skin samples of the 54 patients was the presence of melanophage in the dermis in 100% of them. After considering all findings in the medical history, physical examination and histopathological studies, the final diagnosis was as follows: macular amyloidosis in 26 (48.15%), post-inflammatory hyperpigmentation in 14 (25.93%), rubbing melanosis in 9 (16.67%), notalgia paresthetica in 3 (5.55%), and papular amyloidosis in 2 (3.10%) patients.

Conclusion: According to our results, the most common causes of posterior pruritic pigmented back patches are macular amyloidosis and post-inflammatory hyperpigmentation.

Keywords: cutaneous amyloidosis, hyperpigmented patch, post-inflammatory hyperpigmentation, pruritus

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INTRODUCTION

An increase has been recently observed in the number of cases with skin type 4 and 5 with complaint of posterior pigmented patches with a rippled pattern, especially in women, which are pruritic in some cases. This complication may be restricted to the back, or similar lesions may exist on the lateral arms, anterior chest, intrascapular region, and rarely in other parts of the body. However, there is no unique description of these lesions in the reference books, and they have rarely been reported in the literature ¹⁻⁶. Moreover, such data could not be of much help in the diagnosis

and treatment of this disorder. Therefore, we decided to study the clinicopathological aspects of these patients for reaching a better understanding of this disease.

PATIENTS AND METHODS

We conducted this cross-sectional study after receiving the approval from the Ethics Committee of Mashhad University of Medical Sciences. In this study, we evaluated the clinicopathological aspects and probable responsible factors in the manifestation of posterior pruritic pigmented patches in patients referred to the dermatology

clinic of Qaem University Hospital from October 2007 to September 2009.

As inclusion criteria, only females with complaint of pigmented patches on the upper back, anterior chest, external arms and rarely on other body areas were included in the study. After fully explaining the study protocol, 60 patients voluntarily entered the study and a written informed consent was obtained from each of them or their legal guardian. Initially, a full medical history was taken and a complete physical examination was performed. Afterwards, a 3mm punch biopsy was obtained from the upper back of each patient. All the collected samples were studied by a single dermatopathologist by applying hematoxylin and eosin (H&E) and congo red staining using polarized microscopes.

The diagnostic histopathological criteria were as follows:⁷

- Post-inflammatory hyperpigmentation (PIH): basal layer hyperpigmentation, melanin incontinence and lymphocytes existence around papillary dermis vessels without any signs of an underlying dermatosis.
- Frictional melanosis: melanin incontinence with or without vacuolar changes and some degenerated keratinocytes.
- Notalgia paresthetica: melanin incontinence with or without slight hyperpigmentation in the basal layer, scattered degenerated keratinocytes with amyloid sedimented globules.
- Cutaneous amyloidosis: sedimentation of small hyaline globules in the papillary dermis.

Considering the site of complaint and the presence of pruritus in the majority of the patients, we proposed that superficial mycoses may have a pathogenic role in this situation; therefore, the patients were referred to an equipped mycology lab for pityrosporum/malassezia yeasts evaluation with direct microscopic examination of skin scrapings.

pityrosporum /malassezia yeasts was scored as negative to +4 as follows:⁸

- 1+: 1-5 yeasts in each high power field (HPF)
- 2+: 5-10 yeasts in each HPF
- 3+: 10-20 yeasts in each HPF
- 4+: > 20 yeasts in each HPF

All findings including the patient's medical history, physical examination, and pathological and mycology studies were recorded in a specially designed questionnaire. The data was then analyzed with the SPSS software version 11.5 using independent "T-test" and X² tests.

RESULTS

In this study, all 60 patients were female with a mean age of 31.43 ± 9.71 years (range 12 - 61 years) with the most common age group being 18-43 years (90%). About 85% of the women were housewives and 15% were employed. The duration of the lesions ranged from 2 months to 20 years with a mean duration of 4.30 ± 4.52 years. The most common lesion sites were the upper back, anterior chest, intrascapular area, and the external part of the arms. All the aforementioned sites were simultaneously involved in 15 patients (25%). The upper back was involved in all 60 patients while some areas such as the face, forearm, legs and abdomen were the least affected body parts. The lesions had no symptoms in 6 patients (10%) while 52 patients had pruritus and 5 (8.34%) had both pruritus and stinging. Other significant findings in the medical history of the patients are summarized in Table 1.

Fifty-four patients were referred for mycology examination with direct skin smear in case of pityrosporum/malassezia yeasts infection. The test result was positive in 41 patients and negative in the remaining 13 patients. Among the 41 infected

Table 1. Characteristics of the patients with posterior pigmented pruritic patches

| Patient History | positive | | Negative | | All |
|--|----------|---------|----------|---------|-----|
| | Number | percent | Number | percent | |
| History of similar lesions in the close family | 22 | 36.73 | 38 | 63.37 | 60 |
| Past medical history* | 15 | 25 | 45 | 75 | 60 |
| Drug history except for OCP | 11 | 18.32 | 49 | 81.68 | 60 |
| History of OCP use | 6 | 10 | 54 | 90 | 60 |
| Regular menstruation | 43 | 71.1 | 12 | 28.3 | 60 |
| History of the continuous use of nylon towels | 34 | 56.6 | 26 | 43.4 | 60 |

*Psychosis, gastritis, depression, hyperlipidemia, hypertension, diabetes, hypothyroidism, hyperthyroidism, infertility, renal lithiasis, varicosis

cases, the infection severity was +1 in 12, +2 in 21, +3 in 6, and +4 in 2 patients. However, when studying skin biopsy specimens, the pityrosporum/malassezia yeast was seen in only 19 samples (35.1%).

The most common finding in pathological examination was the presence of melanophage in the dermis in 100% of them, along with basal layer hyperpigmentation in 48 (88.88%) and hyaline globules in papillary dermis in 28 (51.58%) patients. Dyskeratotic cells were observed in 2 patients (3.7%) (both of them had amyloidosis) and vacuolar degeneration in 10 (18.51%) patient. Only one sample was positive in Congo red staining.

After considering all findings in the medical history, physical examination and histopathological studies, the final diagnosis was as follows: macular amyloidosis in 26 (48.15%), post-inflammatory hyperpigmentation in 14 (25.93%), rubbing melanosis in 9 (16.67%), notalgia paresthetica in 3 (5.55%), and papular amyloidosis in 2 (3.10%) patients. It is noteworthy that in our study, none of the 3 cases of notalgia paresthetica had amyloid globules. In most cases, the coincidental involvement of the upper back, anterior chest, intra scapular area, and external part of the arms was seen, with the upper back being the most common site.

There was no significant difference in the mean age of the patients with macular amyloidosis (31.84 ± 10.43) and PIH (28.92 ± 11.32) ($P=0.43$) whereas a significant difference was seen between the existence of mycosis elements such as pityrosporum/malassezia yeasts in skin smear samples with post-inflammatory hyperpigmentation ($P=0.046$). No significant association was observed between the type of the disease and the patient's occupation, history of local pruritic illness, menstruation, or history of oral contraceptive consumption. Although no significant correlation was detected between using nylon towels and the disease type, the highest usage rate of such towels was in patients with macular amyloidosis (69.23%).

DISCUSSION

Among patients visiting dermatology clinics, there are cases of pruritic pigmented patches in the upper posterior segment of the trunk, external parts of the arms, anterior chest, intrascapular area, and rarely in other parts of the body. These

cases have not yet been defined as a specific type of skin disease in major references, and only one case has been mentioned as macular posterior pigmentary incontinence¹.

Sixty patients with the above-mentioned characteristics were surveyed in this study. It was interesting that all the patients were female, and most of them were within the reproductive age (15-45 years). Although the percentage of affected females is higher than males in all the previous studies, the females did not comprise 100% of the involved cases in any of them²⁻⁵; moreover, the reproductive age was the most commonly involved age group in all the previously conducted studies^{3,5}.

Five percent of our patients had concurrent hirsutism, which could suggest the probable role of hormones in the pathogenesis of this disease. On the other hand, 71.7 % of our patients had regular menstruation periods which could question the role of hormone imbalance in this disorder to some extent. Accordingly, this contrast highlights the need for further studies with a larger sample size in order to better clarify such aspects of the disease.

Most of our patients were housewives and all of them had Fitzpatrick's skin type 4. In addition to considering the distribution of cutaneous lesions on the covered parts of the body, this finding indicated that there was no correlation between sun exposure and the pathogenesis of this disease. Similar studies also reported similar results^{3,4}.

The reason why male patients with the mentioned characteristics did not visit our clinic may be the fact that the lesions mainly affect covered parts of the body and pigmentary changes, especially in such areas, are not a major concern for men. There was no associated disease in the patients except for three cases of hirsutism. Rasi et al also reported this finding in their study, which was conducted in Iran in 2004³.

In our study, thirty-six percent of the patients had a similar history in their close family members, which has not been mentioned in other studies. Moreover, only 13 (24.07%) had a negative smear result for pityrosporum/malassezia yeast in our study; therefore, the co-existence of this type of superficial mycosis could be a pathogenic factor leading to this disease or could have an indirect effect on the immunological response. Toxin production and lipase activity of the yeast inducing

a pro-inflammatory state and stimulating host immune response may be involved in disease pathogenesis, as well ^{9,10}. About 33.3% of the patients had a history of pruritic lesions, which could be due to the existence of this type of mycosis or other unknown causes inducing hyperpigmentation in this disorder. In our patients, there was a significant relationship between the existence of superficial mycosis and the diagnosis of PIH.

In histopathological reports, 48.15% of our patients had macular amyloidosis. However, in a study in 1984 on 33 patients with scapuloclavicular pigmentation, only one case of amyloid globules in the papillary dermis was diagnosed, and the authors stated that this disorder differed from macular amyloidosis ⁵. In another study in 1996 on patients with clinical features of macular amyloidosis in the upper back but with no amyloid globules in the subepidermis, after considering the clinical similarity between these patients and macular amyloidosis, the authors used the expression "macular posterior pigmentary incontinence" but did not prove the correlation between these macular pruritic pigmented lesions and macular amyloidosis ¹. In a study conducted by Rasi et al on 100 patients with similar clinical features, biopsy was performed in only 10 cases whereas globular matters were seen in all the patients, and thus macular amyloidosis was confirmed. However, in the other 90 patients, this diagnosis was only based on their clinical features ³. In 1988, three patients with pigmentation in their upper back were reported in China. In their histopathology reports, amyloid sedimentation was diagnosed in 2 cases while the presence of amyloid sedimentation in the third patient was confirmed with electron microscopy ⁶. Also, in a study on 27 patients conducted in India, amyloid staining was positive in only 11 cases ² whereas in our study, only 1 case showed positive Congo red staining. It is to note that Congo red staining may show false negative results and if Crystal Violet staining was used, the quantity of positive amyloid cases would have increased.

Although 56.6% of our patients, especially 69.23% of them with macular amyloidosis, had a positive history of continuous friction including using nylon towels in the bathroom, still no significant statistical correlation was proved between continuous friction and macular amyloidosis ($P=0.131$). Some studies

ruled out this association ^{2-4,11} while others have shown a strong correlation between continuous friction with macular amyloidosis ¹²⁻¹⁴.

The majority of patients with pruritic pigmented patches in the upper back and sometimes on the lateral arms, anterior chest, and rarely on other parts of the body are women in their reproductive age. Based on clinical findings and histopathology results, the most significant suggested diagnosis is macular amyloidosis and post-inflammatory hyperpigmentation. Although female hormones may play a role in the development of the disease, ultraviolet exposure, family and drug history, underlying diseases, and continuous friction in bathroom with nylon towels may not be involved in disease pathogenesis. The high colonization rate with *pityrosporum ovale* may be a pathogenic factor leading to the disease or may have an indirect effect on the immunological response.

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