

Morphological and pigmentary variation of pityriasis versicolor in Erbil city

الاختلافات اللونية والشكلية للفطريات المتعددة الألوان في مدينة اربيل.

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Abstract

Background and objectives: Pityriasis versicolor is a common superficial fungal infection of the skin causing scaly discolored lesions involving mainly the trunk. The aim of this study is to assess the morphological and pigmentary variation of pityriasis versicolor in Erbil city.

Patients and Methods: The study sample consists of 120 patients with pityriasis versicolor attending the department of dermatology and venereology at Rizgary teaching hospital in Erbil city. A thorough history was taken and clinical examination was done. The evoked scale sign, Wood's light examination and skin scraping with potassium hydroxide (KOH) preparation was done for all patients.

Results: Out of the 120 patients with pityriasis versicolor, 62 were females and 58 were males with a mean age of 26.1 years ± 10.8 (SD). The trunk was the most commonly involved site. Duration was variable from one week to 20 years and recurrence was present in 51.7% of the patients. Hyperpigmented lesions were present in 41.7%, 12.5% had hypopigmented lesions and 35.8% had combinations of both. Erythematous lesions were present in 10%. No significant association was found between skin type and colour of the lesions. Evoked scale sign was positive in 93.3%, wood's light examination was positive in 90.8% and KOH examination was positive in 71.7% of patients.

Conclusion: Pityriasis versicolor is one of the most common disorders of pigmentation, and it is a disease of the young adults; all types of pigmentary variations in pityriasis versicolor are present.

Key words: Pityriasis versicolor, Wood's light, Morphological feature, Erbil.

الخلاصة :-

ان الهدف من هذه الدراسة هو تقييم التغيرات اللونية والشكلية لهذا المرض الشائع الالتهابي الفطري السطحي في مدينة اربيل . المرضى والطرق: تكون نموذج البحث من 120 مريض مصاب بالفطريات المتغيرة الألوان، 62 منهم من الاناث و 58 من الذكور، راجعوا العيادة الاستشارية للأمراض الجلدية في مستشفى رزكري التعليمي في اربيل وتم تشخيص المرض سريريا من قبل الاختصاصيين الباحثين بعد اخذ التاريخ المرضي لهم جميعا , وتم اجراء الفحوصات المختبرية من خلال فحص اثاره التفشّر. وفحص ضوء وودز وفحص هايدروكسيد البوتاسيوم.

النتائج: شارك في هذا البحث 120 شخص من مختلف الاعمار والاجناس وتبين ان منطقة الجذع هي من اكثر مناطق الجسم اصابة، وكان اللون الغامق موجودا في 41.7%، اما اللون الفاتح فكان موجودا في 12.5% منهم , فيما بلغت الإصابة باللونين الغامق والفاتح 35.8% , اما اللون الاحمر فكان موجودا في 10% من المرضى وتبين من الدراسة ان فحص الودز الضوئي كان ايجابيا في 90.8% , بينما كان فحص هايدروكسيد البوتاسيوم موجبا في 71.7%.

الاستنتاج: تبين من خلال الدراسة ان جميع التغيرات اللونية والصبغية الفاتحة اللون والغامقة لهذا المرض اللوني الشائع بين فئة الشباب موجوده .

Introduction

Pityriasis (tinea) versicolor (TV) is a mild, chronic infection of the skin caused by *Malassezia* yeasts, and characterized by discrete or confluent, scaly, discolored or depigmented areas, mainly on the upper trunk. Pityriasis versicolor is an opportunistic infection of the skin. In most cases represents a shift in the relationship between a human and his or her resident yeast flora^{1,2}. Pityriasis versicolor is caused by *Malassezia furfur*, the yeast phase of this organism is classified as *Pityrosporum orbiculare*. As yeast, the organism is part of the normal follicular flora. It produces skin lesions

when it grows in the hyphal phase³. Although pityriasis versicolor occurs most frequently in tropical climates with high ambient temperatures and high humidity, it is also a common disorder in temperate climates. No racial or gender differences have been observed. The typical patient is a young adult, but people of any age may develop the disease. *Malassezia* has an oil requirement for growth, accounting for the increased incidence in adolescents and preference for sebum-rich areas of the skin. *M. furfur* normally lives on human skin in amounts so minute as to be undetectable on potassium hydroxide (KOH) examination of stratum corneum⁴. Infection by *M. furfur* results in a well demarcated, finely scaling patches with variable pigmentation, occurring most commonly on the upper trunk and extremities. Most patients are asymptomatic, however, some complain of mild pruritus⁵. Because there are few available studies on its morphological and pigmentary variation we did this study to assess the morphological and pigmentary variation of a group of patients with pityriasis versicolor in Erbil city.

Patients and Methods

This cross-sectional study included 120 patients with pityriasis versicolor attending the department of dermatology and venereology at Rizgary teaching hospital in Erbil city during the period from January 2012 to January 2013. The diagnosis was made on clinical bases.

An interview with the patients was done using a questionnaire designed by the researchers and data were collected individually at the time of the diagnosis. The questionnaire included patient's age, gender, occupation, skin type, duration of the current condition, family history, shape of the lesions (oval, round, irregular), surface and color of the lesions (hypopigmented, hyperpigmented, combination of both and erythematous), the extent of skin involvement (localized or wide spread), the body sites involved, recurrences after treatment, any itching and whether it is, mild, moderate or severe and the presence of seborrheic dermatitis. History of any associated diseases was taken with special emphasis on diabetes mellitus and immunosuppressive diseases. A detailed drug history was taken including antibiotics, antifungal and steroids whether topical or systemic.

Diagnosis was made on clinical grounds based on a clear and definite clinical characteristic of pityriasis versicolor confirmed by the evoked scale sign, and Wood's light examination. The "evoked scale sign" was done in which a visible layer of thin scale is elicited by either stretching or scraping the affected skin. Two techniques were used in this study to observe the evoked scale sign of pityriasis versicolor. In the first technique, the clinician uses his thumb and forefinger to stretch the skin, eliciting a visible white patch of scale overlying the affected area, on release, the scaly patch on the affected area is still recognizable. In the second technique, the clinician scrapes an active lesion with a No. 15 scalpel blade, which is held perpendicular to the skin to avoid laceration, or a glass microscope slide, again yielding a pale and fuzzy scale that is confined to the lesion⁶. Wood's light examination was done in a dark room to accentuate pigment changes, and looking for a yellow-green fluorescence of the lesions.

Laboratory investigation in the form of direct examination of skin scraping using 10% potassium hydroxide (KOH) preparation for the demonstration of mixture of short branched hyphae and spores (a 'spaghetti and meatballs' appearance) was conducted for all patients.

SPSS version 20 was used for data analysis, chi-square test was used and a P-value equal or less than 0.05 was considered statistically significant.

Results

Out of 120 patients with pityriasis versicolor, 62 (51.7%) patients were females and 58 (48.3%) patients were male. The age of the patients ranged from 8 years to 58 years with a mean of 26.1 years $\pm$ 10.8 (SD). The trunk was the most commonly involved site (92.5%) followed by the neck (50.8%) and upper arms (35.8%) (Table 2).

Duration of the condition was variable, minimum duration was one week and the maximum was 20 years. Recurrence was recorded in 62 (51.7%) patients, seborrheic dermatitis in 29 (24.2%) patients and itching was mild in 24 (20%) patients, moderate in 9 (7.5%) patients and severe in 16 (13.3%) patients.

Fifty (41.7%) patients had hyperpigmented lesions (Figure 1), 15 (12.5%) patients had hypopigmented lesions (Figure 2) and 43 (35.8%) patients had combinations of both. Erythematous lesions were present in 12 (10%) patients (Table 3). No significant association was found between skin type and color of the lesion (P- value 0.78). Shape of the lesions was oval in 23 (19.2%) patients, rounded in 44 (36.7%) patients and irregular in 53 (44.2%) patients (Figure 3).

Topical antifungal drugs were used by 30 (25%) patients and systemic antifungal by one patient only. Four patients had diabetes mellitus, three patients used topical steroids and two used systemic steroids.

Evoked scale sign was positive in 112 (93.3%) patients, wood light examination was positive in 109 (90.8%) patients and KOH examination was positive in 86 (71.7%) patients.

Discussion

Pityrosporum ovale is part of the normal skin flora and appears in highest numbers in areas with increased sebaceous activity. It resides within the stratum corneum and hair follicles, where it thrives on free fatty acids and triglycerides. The disease may occur at any age, but it is much more common during the years of higher sebaceous activity (i.e., adolescence and young adulthood). Some individuals, especially those with oily skin, may be more susceptible⁷. The sexes are probably equally prone to this condition, but there are certainly differences in susceptibility at different ages¹. We found the frequency of female patients with pityriasis versicolor to be slightly higher than that of male patients, 62 (51.7%) patients versus 58 (48.3%) patients. Similar results were found in an Iranian study in which female patients made 52.1% of the patients⁸. Our results were also consistent with other authors⁹. While they were inconsistent with other authors in which a higher incidence in males than in females was reported^{10,11}. The condition is rare in childhood but becomes more common in the late teens, with a peak in the early twenties. Infections in old age are rare¹. The youngest patient in our study was 8 years old and the oldest was 58 years old with a mean of 26 years, these data were in agreement with other studies^{10,11}. In a study done on pediatric age group the youngest age group affected was 8 years also¹². The sites involved are the same as in other studies, no rare sites were found. The most prevalent site of infection was the trunk (back, chest and abdomen) which was concordant with the majority of studies worldwide^{8,9,13,14}. The distribution of *Malassezia* species on back and chest is parallel with the density and activity of pilosebaceous glands in these areas. The duration of clinically obvious skin lesions was considerably variable from one week up to twenty years. The lesions of pityriasis versicolor may last months to years and may fade during the cooler months in temperate zones¹⁵. Duration up to 35 years has been reported by other investigators¹⁰. The condition was recurrent in 51.7%. In immune competent individuals factors predisposing to recurrence include a tendency toward seborrhea and heavy sweating in the presence of high temperature and high humidity. There may be an inherited predisposition to the disease and this may explain the long term nature of the disease¹⁶. Without treatment pityriasis versicolor is a chronic disease and following treatment recurrence is an outstanding problem, reaching 60% one year after treatment and 80% after 2 years¹⁷. Seborrheic dermatitis was present in 24.2%. Seborrheic dermatitis is seen more frequently than expected in patients with pityriasis versicolor¹⁸. There are now many studies indicating that *Malassezia* plays an important role in seborrheic dermatitis¹⁹. Itching was mild in 20% of patients and severe in 13.3%. In a similar study the condition was asymptomatic in 70% and mild itching was present in the rest¹¹. Pityriasis versicolor is asymptomatic and the major concern is its appearance⁴. The color of the lesion varies from 'café au lait' to light or deep brown. In patients with a sun tan, lesions are more likely to be hypopigmented. Pityriasis versicolor produces azelaic acid, which is a depigmenting agent. It also inhibits the development of a suntan on skin exposed to ultraviolet radiation. Therefore, when patients with active pityriasis versicolor go out into the sun, the affected skin does not tan and becomes relatively hypopigmented¹⁵. In this study 41.7% of patients had hyperpigmented lesions, 12.5% of patients had hypopigmented lesions and 35.8% of patients had combinations of both. Erythematous lesions were present in 10% of patients. No significant

association was found between skin type and color of the lesions. Our results are consistent with other authors^{10, 11}.

The diagnosis of pityriasis versicolor relies on the clinical manifestations and microscopic examinations of the lesions²⁰. Direct examination was positive in 71.7% of patients. In another study direct mycological examination was positive in 77%⁹ while in other studies the demonstration of fungi was possible in 100% and 98.9% of pityriasis versicolor lesions on direct microscopic examination respectively^{8, 21}. The diagnosis of pityriasis versicolor is based on observation of short hyphae and yeast ("spaghetti and meatball") in the scales. However, in cases that only hyphae are presented in the scales, direct examination of samples with potassium hydroxide (KOH) especially by unskillful technicians, may fail to reveal the infection thus false-negative results will occur. The evoked scale sign was positive in 93.3% of patients. This phenomenon can be explained by the pathologic effect of *Malassasia furfur* on the skin. Scales seem to be due to the keratolytic effect of the fungus, the hyphal form of this species of yeast produces keratinase, which disrupts the stratum corneum, or to the transformation of triglycerides to irritant fatty acids. When an active lesion is stretched or scraped, the disrupted stratum corneum loosens and forms visible scale. The evoked scale sign may be pathognomonic for pityriasis versicolor^{6, 22}. Wood's light examination was positive in 90.8% of patients. Wood's lamp emits long-wave ultraviolet radiation generated by a high pressure mercury arc fitted with a compound filter made of barium silicate with 9% nickel oxide, the "Wood's filter". This filter is opaque to all light rays except a band between 320 and 400 nm with a peak at 365 nm. Fluorescence of tissues occurs when Wood's light is absorbed and radiation of a longer wavelength, usually visible light, is emitted. Washing the area before subjecting it for Wood's lamp examination should be avoided since it may yield false negative results. *Malassezia furfur* emits a yellowish-white or copper-orange fluorescence. Wood's lamp can detect sub-clinical infection and the extent of infection²³. In another study Wood's lamp was done in all and 78.3% gave a positive fluorescence under Wood's lamp¹¹. The lesion configuration were consistent with the literature. Typically, the eruption shows large confluent areas, scattered oval patches and outlying macules¹. As pityriasis versicolor is a disease of young adults, only four of our patients had diabetes mellitus and non-had other immune suppressive conditions.

Topical antifungal drugs were used by 25% and systemic by only one patient.

Topical treatments for pityriasis versicolor are generally well tolerated²⁴. However, some patients do not respond satisfactorily or experience multiple relapses and may require systemic treatment, particularly when large areas are affected²⁵.

Conclusion

This study showed that all types of pigmentary variations in pityriasis versicolor are present in our area with a predominance of hyperpigmented ones. Moreover, both pigmentary types can occur simultaneously in any individual case.

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Table (1):The sites involved with pityriasis versicolor

Site involved	No.	% N=120
Trunk	111	92.5
Neck	61	50.8
Upper arm	43	35.8
Face	14	11.7
Lower arms	10	8.3
Axilla	5	4.2
Crural area	4	3.3

Table (2): Association between colour and skin type

Color	Type 2 %	Type 3 %	Type 4 %	Total %	P. value
Hypopigmented	0	5	10	15	0.78
Hyperpigmented	1	18	31	50	
Combination	1	20	22	43	
Erythematous	0	3	9	12	
Total	2	46	72	120	



Figure 1: Hperpigmented lesions of pityriasis versicolor 1n 23 year old male patients.



Figure 2: Patient with hypopigmented lesions of pityriasis versicolor.

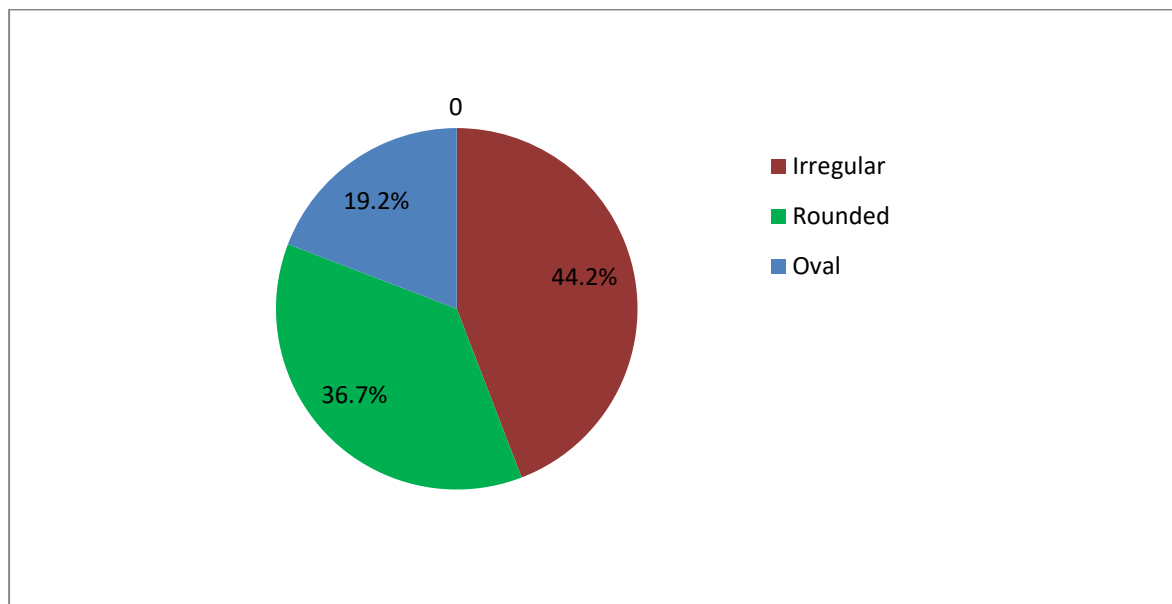


Figure 3: Distribution of sample by shape of the lesions