

Prevalence of *Pityriasis versicolor* among diabetics in Basrah

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Abstract

Introduction: *Pityriasis versicolor* is a chronic superficial fungal infection of the skin, affecting the superficial layer of the stratum corneum, generally affecting the trunk or proximal parts of the extremities, caused by the yeast *Malassezia furfur*. The aim of study is the prevalence of *Pityriasis versicolor* among diabetics in Basrah.

Material and methods: This was a descriptive cross-sectional study done for the period of January to July 2007. In the first step we enrolled 100 consecutive patients with diabetes (including type 1 and type 2 diabetes) who were checked for *Pityriasis versicolor* clinically. In the second step 100 patients with proven *Pityriasis versicolor* were checked for diabetes.

Results: The mean age of the diabetic group was 58.81±12.62 vs. 33.4±14.03 (P value <0.001) with age range of 17-90 in the diabetic group vs. 12-90 in the control group. None of the diabetic group showed clinical evidence of *Pityriasis versicolor* and none of the *Pityriasis versicolor* group showed diabetes mellitus in the investigation.

Conclusions: This study may support the hypothesis that the only fungal skin infection that is not increased in frequency in diabetics is *Pityriasis versicolor*.

Key words: diabetes mellitus, skin, *Pityriasis versicolor*, fungal infection.

Introduction

Tinea (Pityriasis) versicolor is a chronic superficial fungal infection of the skin, affecting the superficial layer of the stratum corneum and generally affecting the trunk or proximal parts of the extremities, caused by the yeast *Malassezia furfur* or *Pityrosporum orbiculare* [1]. The lesions resulting from infection with *M. furfur* are macules that may coalesce into large, irregular patches characterized by fine (pityriasisiform) scaling, of variable colour (either pink, brown or white) on the upper trunk. Although most patients present with only single-colour patches, sometimes two colours are present, with the pink lesions limited to areas that are covered by clothes and the white spreading to the uncovered, tanned skin [2]. Hypopigmentation in the lesions may be due to dicarboxylic acids, such as azelaic acid, that are produced by the fungus and inhibit the tyrosinase that is involved in melanin production [3].

The causative agent is *Malassezia furfur*, a lipophilic yeast living on the skin as part of the normal flora [4]. The diagnosis may be confirmed in most cases by direct microscopic examination and culture is unnecessary.

Pityriasis versicolor is more common in adults than in children, perhaps because of the greater activity of the sebaceous glands in adults [5].

Causative factors are warm climates [6], steroid treated patients, those with Cushing's disease, those undergoing immunosuppression for renal transplantation, and persons who are severely malnourished [7, 8]. No study discusses the association of diabetes mellitus with *Pityriasis versicolor* directly to our knowledge.

The aim is to study the prevalence of *Pityriasis versicolor* among diabetics in Basrah.

Material and methods

This was a descriptive cross-sectional study done for the period of January to July in 2007. In the first step we enrolled 100 consecutive patients with diabetes (including type 1 and type 2 diabetes) and checked for *Pityriasis versicolor* clinically. Patients attending the medical in-patient clinic in Basrah Teaching Hospital constituted the study group. In the second step 100 patients with proven *Pityriasis versicolor* were checked for diabetes, enrolled from the out-patient dermatology clinic in Basrah Teaching Hospital. Diabetes was diagnosed based on doctor diagnosis for those with established diabetes or fasting plasma glucose of ≥ 126 mg/dl (7.0 mmol/l) on two occasions for diagnosed new

cases of diabetes. Informed consent was obtained from participants. Ethical approval was obtained from the ethics committee of the Basrah College of Medicine, Iraq.

A detailed history was elicited in each case with particular reference to cutaneous complaints and including details regarding duration, history of evolution, progression and treatment modalities. Smoking: A "current smoker" was defined as a person who smoked at least one cigarette per day for the preceding three months or more, or had tobacco in any form. The participants were asked about their formal education, and the number of years in each type of education.

In all study patients, a complete clinical work-up was done including height, weight, and body mass index (BMI). Standing height was measured to the nearest 0.5 cm without shoes. Weight was determined without shoes and with participants lightly clothed. Body mass index was calculated by dividing weight by squared height. Socioeconomic status was considered according to other criteria [9].

Those with *Pityriasis versicolor* were diagnosed based on clinical criteria and confirmed by demonstration of organisms by 10% KOH examination of skin scrapings. All diabetics were checked clinically for any clinical evidence of *Pityriasis versicolor*.

The difference between groups was tested using unpaired t test and X^2 depending on the nature of variables. Data analyses were performed using the Statistical Package for the Social Sciences (SPSS) Version 8.0.

Table I. Baseline parameters of the study groups

		<i>Pityriasis versicolor</i> *N [%]	Diabetes N [%]	P value
Sex	Male	40 (40)	55 (55)	0.047
	Females	60 (60)	45 (45)	
Age [years] (mean \pm SD)		33.4 \pm 14.03	58.81 \pm 12.62	<0.001
Residency	Rural	25 (25)	43 (43)	0.01
	Urban	75 (75)	57 (57)	
Smoking		38 (38)	35 (35)	0.76
Socioeconomic status	Non-low	47 (47)	43 (43)	0.66
	Low	53 (53)	57 (57)	
Duration of diabetes [years] (mean \pm SD)		–	8.3 \pm 4.9	
Qualification [years] (mean \pm SD)		6.7 \pm 5.0	3.52 \pm 4.7	<0.001
Weight [kg] (mean \pm SD)		59.39 \pm 16.67	72.06 \pm 18.33	<0.001
BMI [kg/m ²]		23.4 \pm 6.7	26.1 \pm 6.81	0.005
Total		100 (100)	100 (100)	

*N – mean number, BMI – mean body mass index

Results

In the diabetic group males constituted 55 vs. 40% in the *Pityriasis versicolor* group (P value =0.07). Mean age of the diabetic group was 58.81±12.62 vs. 33.4±14.03 (P value <0.001) with age range of 17-90 in the diabetic group vs. 12-90 in the control group. Of those with diabetes only 4 were type 1 diabetes.

For residency, 43% of the diabetic group were from rural areas vs. 25% of the other group (P value =0.01). No significant differences were found between the two study groups regarding smoking state or socioeconomic status. Mean duration of diabetes was 8.3±4.9 years. The mean qualification in the diabetic group was 3.52±4.7 vs. 6.7±5.0 years (P value <0.001). The weight was higher in the diabetic group, 72.06±18.33 kg, while it was 59.39±16.67 kg in the other group (P value <0.001). Again the BMI was higher in the diabetic group, 26.1±6.81 vs. 23.4±6.7 kg/m² (P value =0.005) (Table I).

None of the diabetic group showed clinical evidence of *Pityriasis versicolor* and none of the *Pityriasis versicolor* group showed diabetes mellitus in the investigation.

Discussion

The results of this study confirm that *Pityriasis versicolor* is not increased in frequency in diabetes. This was also reported by García-Humbría et al., where no such infection was seen among 40 patients with type 2 diabetes mellitus [10], and among 307 hospitalized (type 1 and 2) diabetic patients in Tunisia admitted between January 1998 and January 2000 [11].

No difference was found between groups regarding smoking and socioeconomic status, but the BMI was higher in the diabetic group. No association was previously reported between *Pityriasis versicolor* and all these three parameters [6-8].

Among 100 consecutive diabetes mellitus patients attending the diabetic clinic of a hospital in New Delhi, fungal infections were seen in 21, dermatophytoses in 11, and candidiasis in 10 [12], and in another 100 diabetic patients from Jammu, India, candidal and dermatophytic infections were seen in 10 and 8% respectively [13].

Of the 200 patients with diabetes mellitus seen in the in- and outpatient clinic in Raipur, Rajasthan, a total of 122 (61%) patients had some associated cutaneous diseases: the fungal infections being tinea cruris, which was present in 7 cases, followed by tinea corporis and tinea unguium in 3 cases each. *Trichophyton rubrum* was the most frequently isolated agent, present in 11 cases. Monilial infection was seen in 9 cases [14].

Pityriasis versicolor was detected in 8 of 238 (3.3%) patients with type 1 diabetes of more than 5 years duration in one study only [15].

This fungal infection constitutes 25.2% among a total of 12,903 cases of superficial fungal infections seen at the mycology laboratory at the National Skin Centre, Singapore over 5 years [16], but none of them were investigated for diabetes.

Among the 300 patients with a primary psychiatric condition, *Pityriasis versicolor* was seen more frequently in the study group (23%) than in the controls (8%) in India, but none of them were diabetics [17].

Limitation of the study – although we tried to eliminate bias in selecting study participants by setting objective criteria, the *Pityriasis versicolor* group was not age-matched to the diabetic group and this may be the cause of absence of diabetes because of their younger age.

In conclusion, this study may support the hypothesis that the only fungal skin infection that is not increased in frequency in diabetics is *Pityriasis versicolor*, but we have no explanation for this finding yet.

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