



PREVALENCE AND PROFILE OF CUTANEOUS MANIFESTATIONS IN TYPE 1 DIABETES MELLITUS PATIENTS IN CHENNAI, SOUTH INDIA

Diabetology

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ABSTRACT

Objective: To assess the prevalence of cutaneous manifestations among type 1 Diabetes patients and their distribution in relation to metabolic control and disease duration.

Methodology: The study was conducted in the Diabetology department of a tertiary care centre. 45 type 1 Diabetes patients who were on regular follow up and treatment were included in the study. The anthropometry of the patients and the blood sugar levels were measured and also examined for skin manifestations and disorders.

Results: Twenty five (55.5%) type 1 Diabetes patients had skin disorder or manifestations. Out of those 25 patients, 9 (36%) patients had ichthyosis, 7 (28%) had scleroderma like changes followed by dry scaly palms (12%), keratosis pilaris (12%), tinea pedis (8%) and vitiligo (1%). Ichthyosis, Scleroderma like changes, dry scaly palms and keratosis pilaris were more prevalent with patients of duration of Diabetes more than 5 years.

Conclusion: Ichthyosis and Scleroderma like changes are more common in type 1 Diabetes patients and is more prevalent in patients with higher duration of Diabetes.

KEYWORDS

INTRODUCTION

Multiple organ system changes including skin are associated with Diabetes Mellitus. Skin manifestations of diabetes mellitus have various impact on the health with some may be life-threatening. Awareness of cutaneous manifestations of diabetes mellitus can provide insight into the present or prior metabolic status of patients. The recognition of such findings may aid in the diagnosis of diabetes, or may be followed as a marker of glycemic control (1). Timing of appearance of various cutaneous lesions in young patients with diabetes might be potentially useful for the research of their pathogenesis (i.e., derangement of epidermal lipid metabolism), therapeutic intervention (i.e., application of moisturizers or antifibrosing agents), or predicting microvascular complications (2). Though it is well known that diabetes is associated with a number of cutaneous manifestations (3), there is a less number of studies looking at the prevalence of skin changes in young patients with type 1 diabetes.

METHODOLOGY

The study was conducted in the Department of Diabetology at a tertiary care centre in Chennai, South India. Diagnosed type 1 Diabetes patients who were under regular follow up and treatment were included in the study. Patients with history of occupational skin disease or any skin allergies were excluded from the study. Totally 45 patients of type 1 Diabetes were included in the study. The details of the patients were collected using case proforma. It consisted of patient's age, sex, anthropometry, blood sugar levels (fasting and post-prandial), duration of Diabetes and skin examination findings. The patients were thoroughly examined for skin lesions or disorders by two dermatologists. Medical history of the skin diseases were also taken and performed the whole body cutaneous examination including visible mucosal surfaces.

The prevalence of cutaneous manifestations in type 1 Diabetes patients ranged from 38% to 68% (2). Considering a mean prevalence of 53% ($p = 0.53$) with allowable error of 15% ($d = 0.15$), at 95% confidence interval, the sample size was calculated using the formula $N = Z\alpha^2 \cdot p \cdot (1-p) / d^2 = 42.53$. Considering 5% non response rate, the sample size was 45 type 1 Diabetic patients.

RESULTS

Among the 45 subjects, 18 (40%) were males and 27 (60%) were females. The study population comprised of subjects from 16 years to 32 years with equal number of patients in 20 – 24 years age group and 25 – 29 years age group amounting to 58% of the population. 80% of the patients had BMI less than or equal to 22.5. 60% of the patients had fasting blood sugar level more than 125 mg/dl and 56% had postprandial blood sugar level more than 200 mg/dl. The duration of

Diabetes of the study population varied from 3 years to 12 years with 76% of the patients more than 5 years duration.

Table 1: Distribution of characteristics of the study population.

Characteristics	Count	%	
Age groups (years)	< 20	10	22.2%
	20 - 24	13	28.8%
	25 - 29	13	28.8%
	>=30	9	20.0%
Sex	Male	18	40.0%
	Female	27	60.0%
BMI	<= 22.5	36	80.0%
	> 22.5	9	20.0%
FBS (mg/dl)	< 125	18	40.0%
	> 125	27	60.0%
PPBS (mg/dl)	< 200	20	44.0%
	> 200	25	56.0%
Duration of Diabetes (years)	<= 5	11	24.0%
	> 5	34	76.0%

Out of the 45 patients, 25 patients (55.5%) had skin disorders or cutaneous manifestations. Out of the 25 patients, 9 (36%) had ichthyosis, 7 (28%) had scleroderma like changes, 3 (12%) had keratosis pilaris, 3 (12%) had dry scaly palms, 2 (8%) had tinea pedis and 1 (4%) had vitiligo.

Cutaneous manifestations (n = 25)

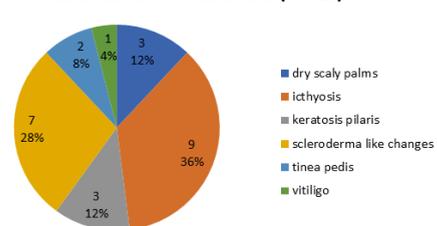


Fig 1: Distribution of cutaneous manifestations among type 1 Diabetic patients.

Table 3: Distribution of cutaneous manifestations among the characteristics of the study population.

Variable	Cutaneous manifestations						
	Dry Scaly Palms	Ichthyosis	Keratosis Pilaris	Scleroderma Like Changes	Tinea Pedis	Vitiligo	
Age groups (years)	< 20	0	1	0	3	1	0
	20 - 24	1	4	1	1	0	1
	25 - 29	2	2	2	1	1	0
	>=30	0	2	0	2	0	0

Sex	Male	1	5	1	3	0	0
	Female	2	4	2	4	2	1
BMI	<= 22.5	3	6	2	6	2	1
	> 22.5	0	3	1	1	0	0
FBS (mg/dl)	< 125	1	4	2	2	1	0
	> 125	2	5	1	5	1	1
PPBS (mg/dl)	< 200	1	5	2	2	1	0
	> 200	2	4	1	5	1	1
Duratio (years)	<= 5	1	0	1	2	1	1
	> 5	2	9	2	5	1	0

Regarding the duration of Diabetes, all cases of ichthyosis and two thirds cases of scleroderma like changes were seen among patients with more than 5 years duration. More number of cutaneous manifestations were seen among patients with BMI less than 22.5. There was no much observed difference in the number of cases among the patients with good and poor blood sugar levels.

DISCUSSION

This study was performed among type 1 Diabetes patients of whom mostly were adults. The prevalence of cutaneous manifestations among type 1 Diabetes patients was 55.5% which almost matched with the Romano G et al (4) which showed 54% prevalence. But other studies like Pavlovic et al (2) (68%), Sawatkar et al (5) (67%) and Yosipovitch G et al (6) (71%) showed a slightly higher prevalence than the current study. The difference may be attributed to the duration of Diabetes of the patients which may wide ranged in other studies.

Pavlovic et al reported ichthyosis prevalence of 22.2% among type 1 Diabetes patients which almost matched with the present study showing a prevalence of 20% (9 out of 45). The skin dryness is one of the most common manifestation among type 1 Diabetes patients. Dry scaly palms and keratosis pilaris were seen in 13.3% (6 out of 45). The hydration state of the stratum corneum is reduced and the activity of sebaceous gland also decreased in patients with diabetes, without any impairment of the stratum corneum barrier function. (7) Even in the absence of clinically apparent xerosis, patients with diabetes have an impaired desquamation process (8).

Sawatkar et al showed 10% scleroderma like changes among type 1 Diabetes patients which almost correlated with present study which showed 15% (7 out of 45). The sclerodermic changes in type 1 Diabetes patients were higher in number among patients with higher duration of Diabetes. Yosipovitch et al showed that the prevalence of scleroderma like changes in type 1 Diabetes patients increased upto 10 times in patients with three times longer duration.

CONCLUSION

Prevalence of cutaneous manifestations among type 1 Diabetes patients was 55.5% among which Ichthyosis and Scleroderma like changes comprised a higher proportion and also increases with duration of Diabetes. Regular dermatological monitoring of type 1 Diabetes patients can help in preventing and treating cutaneous disorders.

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