

CUTANEOUS MANIFESTATIONS OF DIABETES MELLITUS OBSERVED IN URBAN HEALTH CARE

Dermatology

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ABSTRACT

Background: Skin involvement in Diabetes mellitus is very common and occurs in 43-66% of diabetics. **Aim:** To study the cutaneous manifestation in patients with diabetes mellitus attending Dermatology OPD at Saveetha Medical College. **Method:** Seventy-five patients with diabetes mellitus and having skin problem at Saveetha Medical College were included in this study. Clinical details regarding age, sex, duration of diabetes, mode of treatment for diabetes and detailed dermatological examination were done in all the patients. Patients having skin changes secondary to pregnancy were excluded in this study. An informed consent was taken from all the patients. **Results:** The most common cutaneous manifestations observed in our study were infections (87%) followed by acanthosis nigricans (42.6%) and skin tags (29.3%). **Conclusion:** Early detection of skin manifestations in diabetes mellitus is important as to avoid or properly manage the complications and to prevent disability.

KEYWORDS

Diabetes mellitus, Cutaneous manifestations, Infections

INTRODUCTION

Diabetes mellitus is a common endocrinological disorder and affects individuals of all ages. Skin manifestations are frequently observed in diabetic patients and 30% of diabetics have cutaneous disorders^[1].

Abnormal carbohydrate metabolism, impaired phagocytosis, delayed neutrophil chemotaxis, reduced leukocyte adherence, atherosclerosis, microangiopathy, impaired host mechanism, neuronal degeneration and other altered metabolic pathways all play a role. The overall prevalence is the same in type 1 and type 2 diabetic patients. Type 2 frequently develop cutaneous infections and type 1 develop autoimmune type lesions^{[2][3]}.

MATERIALS AND METHODS

A descriptive cross sectional study was conducted in the year 2020 from January to March. Seventy-Five patients with diabetes mellitus and having skin problem at Saveetha Medical College were included in this study. Clinical details regarding age, sex, duration of diabetes, mode of treatment for diabetes and detailed dermatological examination were done in all the patients. Patients having skin changes secondary to pregnancy were excluded in this study. An informed consent was taken from all the patients. All the findings were recorded on specialized designed proforma.

RESULTS

The study population included 75 patients out of which 50 (66%) were males and 25 (33%) were females. The age group ranges from 1 year to 60 years [TABLE 1]. The duration of diabetes was less than 5 years in 15 patients and there were 60 patients above 5 years. Fifty six patients (25.3%) were having Type 2 diabetes mellitus and Seventeen patients (74.6%) had type 1 diabetes mellitus [TABLE 2]. Out of 75 patients, most of the patients had one or more cutaneous manifestation. Among the skin manifestations, Acanthosis nigricans was found to be the most common cutaneous manifestations seen in 32 patients (42.6%) followed by skin tags seen in 22 (29.3%) patients, 17(%) patients had pruritis and xerosis, 15 (20%) patients had foot ulcers.

Cutaneous infections include fungal (92%), bacterial (54.6%) and viral (1.3%) infections. Tinea corporis (40%) was the most common fungal infection and furunculosis (18.6%) were the most common bacterial infection and one patient (1.3%) had herpes zoster. Other cutaneous manifestations were lichen planus 8 (10.6%) followed by xanthelasma 3 (4%) psoriasis 9 (12%) and erythrasma 3 (4%) [TABLE 3]. The p value of this study is 0.000772, hence the result is significant (p<0.5).

Table 2: Percentage And Frequency Based On The Type Of Diabetes

S.NO	TYPE	FREQUENCY	PERCENTAGE
1	Type 1	19	25.3

2	Type 2	56	74.6
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Table 1: Sex And Age Distribution

S.No	Characteristics	Frequency	Percentage
1	Sex		
	Male	50	66.6
	Female	25	33.3
2	Age		
	1 -10 years	1	1.3
	11-20 years	3	4
	21-30 years	7	9.3
	31-40 years	16	21.3
	41-50 years	19	25.7
	51-60 yrs	29	38.6

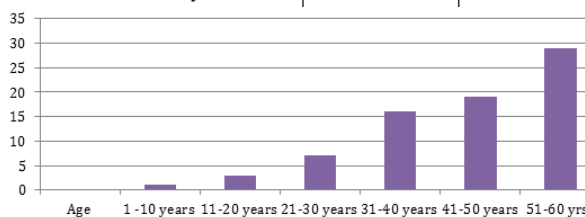


Table 3: Cutaneous Manifestations In Patients With Diabetes (considering There Were More Than One Finding Per Patient)

S. NO	CUTANEOUS MANIFESTATIONS	FREQUENCY	PERCENTAGE
1	Acanthosis nigricans	31	41.3
2	Skin tags	21	28
3	Diabetic dermopathy	0	0
4	Diabetic bulla	2	2.6
5	Foot ulcers	15	20
6	Porokeratosis	0	0
7	Psoriasis	10	13.3
8	Pruritis & xerosis	17	22.6
9	Eruptive xanthoma	3	4
10	Diabetic scleroderma	0	0

11	Cellulitis	14	18.6
12	Tinea	31	41.3
13	Furunculosis	14	18.6
14	Carbuncle	5	6.6
15	Folliculitis	12	16
16	Intertrigo	14	18.6
17	Paronychia	6	8
18	Onychomycosis	6	8
19	Necrobiosis lipodica	0	0
20	Granuloma annulare	0	0
21	Perforating dermatosis	0	0
22	Xanthasma	3	4
23	Erythrasma	3	4
24	Lichen planus	8	10.6

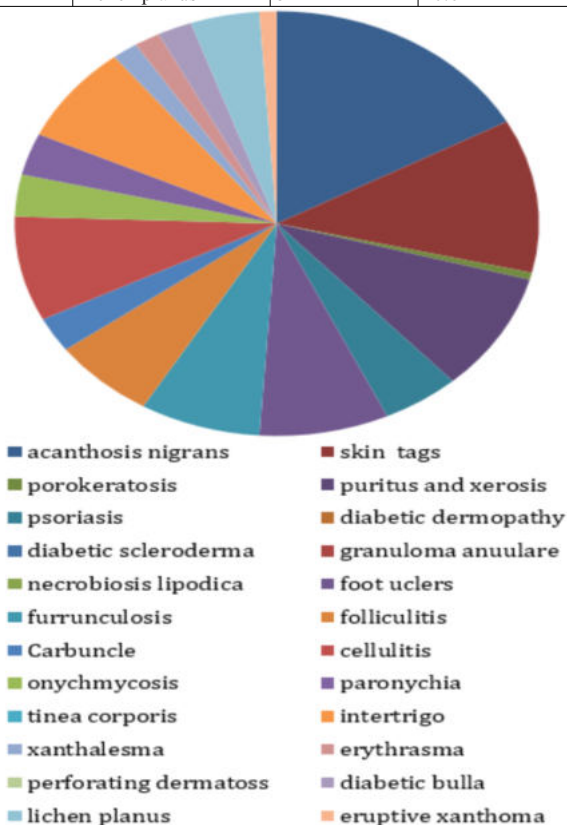


Table 4: Cutaneous Manifestations Based On The Gender (considering There Were More Than One Finding Per Patient)

S.No	Cutaneous manifestations	Frequency MALE	Percentage	Frequency FEMALE	Percentage
1	Acanthosis nigricans	23	30.6	9	12
2	Skin tags	13	17.3	9	12
3	Diabetic dermopathy	0	0	0	0
4	Diabetic bulla	3	4	1	1.3
5	Foot ulcers	12	16	3	4
6	Porokeratosis	1	1.3	0	0
7	Psoriasis	6	8	3	4
8	Pruritus & xerosis	13	17.3	4	5.3
9	Eruptive xanthoma	1	1.3	1	1.3
10	Diabetic scleroderma	0		0	0
11	Cellulitis	10	13.3	5	6.6
12	Tinea	22	29.3	8	10.6
13	Furunculosis	8	10.6	6	8
14	Carbuncle	3	4	2	2.6
15	Folliculitis	7	9.3	5	6.6

16	Intertrigo	10	13.3	4	5.3
17	Paronychia	4	5.3	2	2.6
18	Onychomycosis	3	4	3	4
19	Necrobiosis lipodica	0	0	0	0
20	Granuloma annulare	0	0	0	0
21	Perforating dermatosis	0	0	0	0
22	Xanthasma	1	1.3	2	2.6
23	Erythrasma	2	2.6	1	1.3
24	Lichen planus	4	5.3	4	5.3

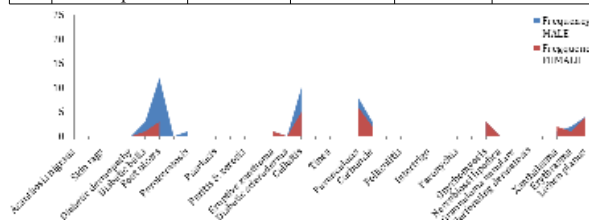


Table 5: Cutaneous Manifestations With Type Of Diabetes (considering Patients Had More Than One Finding)

S. No	Cutaneous manifestations	Type1 (frequency)	Type 1 (percentage)	Type 2 (frequency)	Type 2 (percentage)
1	Acanthosis nigricans	9	12.3	23	30.6
2	Skin tags	4	5.3	18	24
3	Diabetic dermopathy	0	0	0	0
4	Diabetic bulla	1	1.3	3	4
5	Foot ulcers	3	4	12	16
6	Porokeratosis	0	0	1	1.3
7	Psoriasis	5	6.6	5	6.6
8	Pruritus & xerosis	3	4	14	18.6
9	Eruptive xanthoma	1	1.3	2	2.6
10	Diabetic scleroderma	0	0	0	0
11	Cellulitis	4	5.3	11	14.6
12	Tinea	7	9.3	23	30.6
13	Furunculosis	3	4	11	14.6
14	Carbuncle	1	1.3	4	5.3
15	Folliculitis	1	1.3	11	14.6
16	Intertrigo	2	2.6	12	16
17	Paronychia	0	0	6	8
18	Onychomycosis	0	0	6	8
19	Necrobiosis lipodica	0	0	0	0
20	Granuloma annulare	0	0	0	0
21	Perforating dermatosis	0	0	0	0
22	Xanthasma	0	0	3	4
23	Erythrasma	0	0	3	4
24	Lichen planus	1	1.3	7	9.3

DISCUSSION

The cutaneous manifestations in diabetes mellitus are quite common and could be an alarming sign or even the first sign of disease in an unknown diabetic patient. They generally appear after the diabetes has developed although in some patients, they may precede the diagnosis by many years. The cutaneous manifestations are classified into four groups: skin infections (bacterial, fungal and viral) in diabetes, those caused by diabetic complications (microangiopathy, macroangiopathy, foot ulcers and neuropathy), manifestations associated with diabetes mellitus (acanthosis nigricans, diabetic bulla, necrobiosis lipodica, diabetic dermopathy, eruptive xanthomas, granuloma annulare,

acquired perforating dermatosis, rubeosis faciei) and treatment reactions (sulfonyleureas or insulin).

Skin infections (87%) were the common cutaneous manifestation observed in our study. Fungal infections were commonly observed than bacterial and viral infections which is in concurrence with the study done by Shahzad et al^[4]. Impaired phagocytosis, reduced leukocyte adherence, delayed neutrophil chemotaxis and abnormal microcirculation are some of the contributing factors. The impairment of skin barrier function decreased epidermal antimicrobial peptide expression and hypohidrosis are other factors^[5]. Among the fungal infections, Tinea corporis (40%) were commonly observed followed by oral candidiasis (17.3%), paronychia (8%) and onychomycosis (8%). Among the bacterial infections, Cellulitis (20%) were commonly present among the diabetic patients followed by furunculosis (18.6%), folliculitis (16%) and Erythrasma in (4%) of patients. Only one patient (1.3%) had herpes zoster among viral infections.

Acanthosis nigricans were observed in 32 patients (42.6%) in this study. The occurrence of this hyperpigmented velvety flexural skin in diabetes mellitus is related to insulin binding of insulin like growth factor receptors on keratinocytes and dermal fibroblasts^[6]. Patients with acanthosis nigricans had skin tags (29.3%). High insulin levels stimulate keratinocyte proliferation resulting in the growth of these lesions and indicates marker of impaired carbohydrate metabolism^[7].

Diabetic bullae were observed in four patients (5.3%) in this study. The other skin manifestations observed in this study were porokeratosis (1.3%), xanthasma (4%). None of the patients had granuloma annulare, diabetic dermopathy, scleredema adultorum, necrobiosis lipoidica, perforating collagenosis which are usually associated with diabetes mellitus.

Among the complications associated with diabetes mellitus, pruritus and xerosis were present in 17 patients (22.6%). Metabolic abnormalities, autonomic dysfunction, diabetic neuropathy and anhydrosis contribute to pruritus among diabetics and xerosis occurs due to impaired skin barrier function and hypohidrosis^[8]. Fifteen patients (20%) had Foot ulcers. Peripheral neuropathy, microangiopathy along with infection or both contribute to this problem^[9].

In this study, none of the patients had any treatment reactions due to oral drugs or insulin.

CONCLUSION

This study is done to find out various cutaneous manifestations associated with diabetes, their importance of early detection of diabetes and to be able to properly manage or avoid the complications associated with diabetes and prevent disability.

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