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Cutaneous Manifestations of Diabetes mellitus: A Hospital Based Study in Kashmir, India

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Abstract

Background and Objective: Diabetes mellitus is a chronic disease and it affects multiple systems of the body including the skin. The aim of the present study was to see the pattern of cutaneous manifestations in diabetic patients.

Material and Methods: Two hundred diabetic patients attending the outpatient departments of endocrinology and dermatology were studied. A detailed history along with complete systemic and cutaneous examination was carried out in all patients. Relevant investigations were done wherever necessary.

Results: Ninety- nine percent of patients were of type 2 diabetes mellitus. Cutaneous manifestations were present in 136 patients, comprising of 101 (74.26%) females and 35 (25.73%) males. Most of the patients were in fifth (26%) and sixth (34%) decades. Infections (37.50%), skin tags (33.82%), and acanthosis nigricans (11.64%) were the commonest manifestations. Diabetic retinopathy (6.61%), nephropathy (5.88%) and neuropathy (4.41%) were present in patients with cutaneous manifestations but were absent in patients without cutaneous manifestations.

Conclusions: Cutaneous manifestations are quite common in type 2 diabetes mellitus and whenever patients presents with multiple cutaneous manifestations, they should be evaluated for diabetes mellitus and its systemic complications.

Introduction

Diabetes mellitus is the most common endocrine disorder and it is estimated that it will affect 300 million people worldwide by 2025 [1]. Abnormalities of insulin and elevated blood glucose level lead to involvement of multiple organ systems including cardiovascular, renal, nervous system, eyes and skin [2]. More than one third of diabetic patients have some type of dermatologic manifestations during the course of their chronic disease [3]. Abnormal carbohydrate metabolism, atherosclerosis, microangiopathy, neuron degeneration and impaired host mechanism all play roles in the pathogenesis of cutaneous complications. Urbach [4] showed that skin sugar levels run parallel to the blood sugar levels. Cutaneous signs of diabetes mellitus are extremely valuable to the clinician as some of them can alert the physician to the diagnosis of diabetes and also reflect the status of glycemic control and lipid metabolism [5]. It has been observed that without control of diabetes, the treatment response is poor in cutaneous complications [6]. Besides cutaneous manifestations certain skin diseases are strongly associated with diabetes mellitus. Thus, the present study was done to analyze the pattern of diabetic dermatosis in view of increasing prevalence of diabetes in the present scenario of sedentary life style in the general population.

Materials and Methods

Two hundred consecutive patients with the diagnosis of diabetes mellitus attending the endocrinology and dermatology outpatient departments of SMHS Hospital (associated teaching hospital of Government Medical College Srinagar) were studied. A detailed history was taken in each patient with particular reference to cutaneous complaints, including duration, progression and treatment modalities. A detailed clinical examination especially for the presence of muco-cutaneous lesions was done in natural light. All the patients were evaluated for the status of obesity by calculating the body mass index score (BMI) and were classified according to standard WHO classification i.e. [BMI,lt;15=starvation,18.5-25=normal,25-30=overweight,30-40=obeseand,gt;40=morbidobesity]. Assessment of diabetic retinopathy was done by an ophthalmologist. Blood sugar, urine examination, liver function tests, kidney function tests, lipid profile, electrocardiogram and 24 hours urinary protein were done in all patients. Glycosylated hemoglobin (HbA1c) levels were estimated in all patients to assess the control of diabetes. Histopathological examination of skin lesions and microbiological investigations were carried out wherever necessary to confirm the diagnosis.

Results

Among 200 diabetic cases, there were 140 (70%) females and 60 (30%) males; the male: female ratio was 1:2.33. The age of the patients ranged from 18 to 83 years (mean age 56.40 + 12.60 years) and the most common age groups were 51- 60 (34%), 41-50 (26%) and 31- 40 (19%). The majority (99%) of patients was having type 2 diabetes mellitus and only 2 (1%) patients were suffering from type 1 diabetes mellitus. Out of 200 cases, 136 (68%) patients had some associated cutaneous manifestations comprising 35 (25.73%) males and 101 (74.26%) females. The duration of the diabetes ranged from one month to 25 years (mean duration of

diabetes 61.24 + 54.62 months). The cutaneous manifestations were most prevalent in the age group of 51- 60 years (**Table 1**). The majority of patients (32.88%) with cutaneous manifestations were having disease duration between 1-5 years, followed by 6 -10 years (30.20%), > 10 years (24.60%) and less than one year (14.40%). In diabetic patients with cutaneous manifestations, hypertension was present in 36.76%, nephropathy in 5.88%, neuropathy in 4.41%, and retinopathy in 6.61% cases. Out of 136 patients with cutaneous manifestations, 29.41% had uncontrolled and 70.58% had controlled glycosylated hemoglobin (HbA1c) level. Out of 136 patients with cutaneous manifestations 46 (33.82%) were obese and 16 (11.76%) were overweight and these patients had more than one skin manifestation.

Age Group (in years)	Cutaneous Manifestations					
	Present		Absent		Total	
	No.	% age	No.	% age	No.	% age
11 – 20	0	0	2	3.12	2	1
21 – 30	4	2.94	8	12.5	12	6
31 – 40	20	14.7	18	28.12	38	19
41 – 50	38	27.94	14	21.87	52	26
51 – 60	55	40.44	13	20.31	68	34
61 – 70	18	13.23	6	9.37	24	12
> 70	1	0.73	3	4.68	4	2
Total	136	100	64	100	200	100

Table 1: Frequency of cutaneous manifestations with respect to various age groups.

Among the cutaneous disorders commonly associated with diabetes, infections were the most prevalent (**Table 2**). Bacterial infections were seen in 8.82% cases (**Table 2**) and these included impetigo (2.94%), furunculosis (5.14%) and carbuncle (0.73%). Candidal intertrigo, and vulvovaginal candidiasis was seen in 2.94% cases each. Dermatophytic infections included toe nail onychomycosis (11.76%), finger nail onychomycosis (1.47%), tinea pedis (2.20%), tinea corporis (2.20%), tinea manuum (1.47%), and tinea cruris in 0.73% of cases. Among the cutaneous disorders uncommonly associated with the diabetes mellitus only three disease i.e. psoriasis, vitiligo and lichen planus were seen (**Table 2**). Cutaneous complications of diabetic treatment included 4 cases of hypertrophy at the site of insulin injection. Pruritus, localized or generalized without any skin lesions was present in 12 cases (8.82%).

Cutaneous Manifestations	Number of Patients	
	No.	%age
(1) Cutaneous disorders commonly seen in diabetes		
Infections	51	37.5
Skin tags	46	33.82
Acanthosis nigricans	16	11.64
Finger Pebbles	12	8.82
Diabetic dermopathy	11	8.08
Bullous diabeticorum	4	2.94
Rubeosis faceii	6	4.41
Granuloma annulare	3	2.2
Scleridema adulatorum	1	0.73
(2) Cutaneous disorders uncommonly associated with diabetes		
Lichen planus	3	2.2
Vitiligo	8	5.88
Psoriasis	4	2.94
(4) Cutaneous complications of diabetic treatment		
Insulin	4	2.94
Oral hypoglycemic drugs	0	0

Table 2: Pattern of cutaneous manifestations in diabetic patients.

Discussion

Out of two hundred diabetic patients, 68% were having some form of cutaneous involvement. The high incidence of skin manifestations in diabetes has been reported by Nigam and Pande (61%) [7], Mahajan et al (64%) [8], and Wahid and Kanjee (82%) [9], whereas lower incidence has been reported by other workers [10]. The female predominance was seen in our study as reported by Mahajan et al [8] and Romano et al [11]. The frequency of skin disease was more in 5th and 6th decades as reported by Romano et al and Nigam and Pande [7], [11]. Among the dermatosis commonly associated with diabetes mellitus, infections and skin tags were the most common entities seen in 37.50% and 33.82% cases respectively. These manifestations were seen mostly in patients with disease duration of more than one year. Acanthosis nigricans was present in 11.64% cases. The high prevalence of skin tags and acanthosis in our patients can be explained by the fact that a large group of patients were overweight and obese. The cutaneous signs primarily due to microangiopathy seen in our study were diabetic dermopathy (8.08%) and rubeosis faceii (4.41%). The lesser incidence of these conditions in Indian studies has been explained on the dark skin type in Indians [8].

Infections were present in 37.50% cases. The incidence of cutaneous infections was more in uncontrolled diabetics. Fungal infections formed the largest group with onychomycosis being present in 13% cases. Dogra et al [12] have reported a high incidence of onychomycosis in diabetics and it is attributed to increasing age and impaired peripheral circulation. Pruritus without skin lesion was seen in 8.82% cases in the present study. It has been reported as the main presenting complaint by Rao and Pai [13]. Diabetic nephropathy, neuropathy and retinopathy were seen in 5.88%, 4.41% and 6.61% cases respectively in patients having cutaneous manifestation but were absent in patients without cutaneous manifestations. High prevalence of systemic complications, has been reported in diabetic patients with cutaneous involvement as compared to diabetics without cutaneous manifestations [14], [15]. Among the dermatosis associated with increased incidence in diabetes, psoriasis, vitiligo and lichen plans were seen in present study which has been documented earlier. We did not see any adverse drug reaction to oral hypoglycemics, however lipohypertrophy to insulin was seen in 4 patients at injection site.

To conclude, diabetes mellitus involves the skin quite often and whenever patients present with multiple skin manifestations their diabetic status should be checked especially when they are obese.

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