

How to Cite:

Pradhan, K., & Patro, S. (2022). Evaluation of the prevalence and clinical correlation of skin lesions in patients with diabetes mellitus. *International Journal of Health Sciences*, 6(S3), 7836–7840. <https://doi.org/10.53730/ijhs.v6nS3.7875>

Evaluation of the prevalence and clinical correlation of skin lesions in patients with diabetes mellitus

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Abstract--Background: DM and the prediabetes state are associated with a number of skin manifestations. It has been shown that cutaneous manifestations are seen in a minimum of 30% of diabetics during the course of their illness, and in some patients, it may be the first sign of the disease. Aim of the study: To evaluate the prevalence and clinical correlation of skin lesions in patients with diabetes mellitus. Materials and methods: The present study was conducted in the Department of Dermatology of the Medical institution. For the study, we evaluated a total of 150 patients with confirmed diagnosis of diabetes mellitus reporting to OPD section of the hospital were selected for the study. An informed written consent was obtained from all the participants after explaining them protocol of the study. Results: Table 1 shows the demographic data of the patients. We observed that pruritis (n=62) was most common cutaneous manifestation in patients with DM. Conclusion: Within the limitations of the present study, it can be concluded that cutaneous manifestations are fairly common in patients with diabetes mellitus. The most common cutaneous manifestations in current study group was pruritis. Other common conditions were canthosis nigricans, cutaneous infections and Achordons.

Keywords--diabetes mellitus, type 1 DM, type 2 DM, skin lesions.

Introduction

Diabetes mellitus has emerged as one of the most challenging public health problems of the twenty-first century. It is a multifaceted non-communicable disease that currently affects over 366 million people worldwide and its

prevalence is likely to double by 2030.^{1, 2} The increase in prevalence and incidence of diabetes mellitus has been attributed to changes in lifestyle risk behaviors due to urbanization associated with sedentary lifestyles and unhealthy diets. The social and economic burden of patients living with diabetes on the health care system is substantial, due to high treatment expenditures, lost productivity and economic growth.³ DM and the prediabetes state are associated with a number of skin manifestations. It has been shown that cutaneous manifestations are seen in a minimum of 30% of diabetics during the course of their illness, and in some patients, it may be the first sign of the disease. While in others, it may even appear before the diagnosis of diabetes mellitus (DM) is confirmed.⁴⁻⁶ Hence, the present study was conducted to evaluate the prevalence and clinical correlation of skin lesions in patients with diabetes mellitus.

Materials and Methods

The present study was conducted in the Department of Dermatology of the Medical institution. The ethical clearance for the study was approved from the ethical committee of the hospital. For the study, we evaluated a total of 150 patients with confirmed diagnosis of diabetes mellitus reporting to OPD section of the hospital were selected for the study. An informed written consent was obtained from all the participants after explaining them protocol of the study. The patients were evaluated for the presence of any skin lesion over a period of 24 months. The confirmation of diabetes was done using blood tests. Detail evaluation of demographic profile and clinical manifestations were carried out. The statistical analysis of the data was done using SPSS version 11.0 for windows. Chi-square and Student's t-test were used for checking the significance of the data. A p-value of 0.05 and lesser was defined to be statistically significant.

Results

In the present study, skin lesions of 150 diabetic patients were studied. 70 patients had type 1 DM and 80 patients had type 2 DM. The mean age of patients with Type 1 DM was 35.69 years and with type 2 DM was 42.26 years. Table 1 shows the demographic data of the patients.

Table 2 shows cutaneous manifestations of DM in patients. We observed that pruritis (n=62) was most common cutaneous manifestation in patients with DM. Acanthosis nigricans, cutaneous infections and Achordons were also common in diabetic patients.

Discussion

In the present study, 150 patients with Type 1 and type 2 DM were screened for cutaneous manifestations for 24 months. It was observed that pruritis was most common manifestation. Acanthosis nigricans, cutaneous infections and Achordons were also common in diabetic patients. The results were compared with previous studies from the literature and results were found to be consistent. Trihan JE et al⁷ evaluated the prevalence of 7 known diabetes-associated dermatological (non-infectious) manifestations (DADM) in a primary care setting, and their association macro/microvascular complications. Cross-sectionnal study included patients consulting in general practice for DM-follow up, from November

2016 to January 2017. Patients aged <18 years old or consulting for other reason than DM follow up were excluded. Each patient were screened for diabetic dermopathy (DD), Huntley's papules (HP), necrobiosis lipoidica diabetorum (NL), acanthosis nigricans (AN), cheiroarthropathy (CA, or stiff hand syndrom), scleredema adutorum of Buschke (SB) and bullosis diabetorum (BD). 213 diabetic patients were included over a period of 3 months. They found a prevalence of 17.8% (38 patients) for DD, 8.5% (18) for HP, 2.8% (6) for NL, 2.3% (5) for AN, 1.9% (4) for CA, 1.4% (3) for SB and 1.4% (3) for BD. DADM seems to be a risk factor for vascular complications. Association with vascular involvement was stronger with DD and macroangiopathy, and with NL and microangiopathy. They concluded that in primary care, DM-associated dermatological manifestations present similar prevalence rates to a tertiary care setting, based on literature. Complete dermatological examination of diabetic patients is essential and could lead to a better overall management of the pathology, as diabetic cutaneous manifestations appear as a sign of vascular involvement. Rangunatha S et al studied the impact of control of diabetes on the pattern of cutaneous disorders. A cross-sectional descriptive study of patients attending diabetic clinic in a tertiary care hospital. A total of 500 consecutive patients were studied. Detailed history, clinical examination and relevant investigations were done to diagnose diabetic complications and cutaneous disorders. Dermatoses with or without known pathogenesis were correlated with age, gender, fasting plasma glucose (FPG), duration of diabetes, and complications of DM. Majority of patients had well-controlled (FPG<130 mg/ml, 60%) type 2 DM (98.8%). No statistically significant difference between the patients with or without DM specific cutaneous disorders was noticed with reference to age and gender distribution, duration of DM and FPG. Signs of insulin resistance, acrochordon (26.2%), and acanthosis nigricans (5%) were common, followed by fungal (13.8%) and bacterial (6.8%) infections. Eruptive xanthoma (0.6%), diabetic foot (0.2%), diabetic bulla (0.4%), diabetic dermopathy (0.2%), generalized granuloma annulare (0.2%), and insulin reactions (6.2%) and lipodystrophy (14%) were also seen. They concluded that well-controlled diabetes decreases the prevalence of DM-specific cutaneous disorders associated with chronic hyperglycemia. ⁸

Sawatkar GU et al ⁹ studied the spectrum of dermatoses in patients with type 1 DM and the effects of disease duration and long-term glucose control on these cutaneous manifestations. After prior consent, clinical examination and relevant investigations were done in 500 subjects with type 1 DM enrolled between July 2011 and June 2012. The presence of various dermatoses was correlated with the duration of diabetes. Of five hundred subjects, 339 (67.8%) had one or more dermatoses. The mean age of the patients was 16.9 ± 6.9 years (range 1-25 years) and mean total duration of diabetes was 4.43 ± 4.4 years. Cutaneous adverse effects related to insulin injections (CAII), comprising lipohypertrophy (41%), post-inflammatory hyperpigmentation (3%), lipoatrophy (0.6%) and acanthosis nigricans (0.4%), were the most common findings, followed by limited joint mobility (LJM) (16.8%), xerosis (15.8%) and scleroderma-like skin changes (10%). Patients having long-duration DM (> 4.4 years) were significantly more likely to have lipohypertrophy, LJM, scleroderma-like skin changes, diabetic dermopathy, acanthosis nigricans and skin tags. Lipohypertrophy, LJM and scleroderma-like skin changes also showed significant correlation with blood glucose level. Their study suggested that cutaneous changes are common in young Asian patients

with type 1 DM. Farshchian M et al ¹⁰ evaluated the prevalence and main clinical presentation of skin disorders in patients with DM. For a period of 6 months, all of the patients with DM attending the outpatient dermatology and diabetes clinics of the Hamedan University of Medical Sciences, Iran, were clinically examined for cutaneous manifestations of DM. Patients also were evaluated for glycemic control and evidence of other diabetes-related complications. Diabetic skin manifestations were detected in 110 of 155 (71%) patients with DM. The most common skin lesions in both patients with type 1 and type 2 DM were infectious in origin (72%). No statistically significant differences in cutaneous manifestations were observed between the 2 types of DM. They concluded that in the outpatient population with DM there is a high prevalence of skin lesions mainly represented by cutaneous infections.

Conclusion

Within the limitations of the present study, it can be concluded that cutaneous manifestations are fairly common in patients with diabetes mellitus. The most common cutaneous manifestations in current study group was pruritis. Other common conditions were canthosis nigricans, cutaneous infections and Achordons.

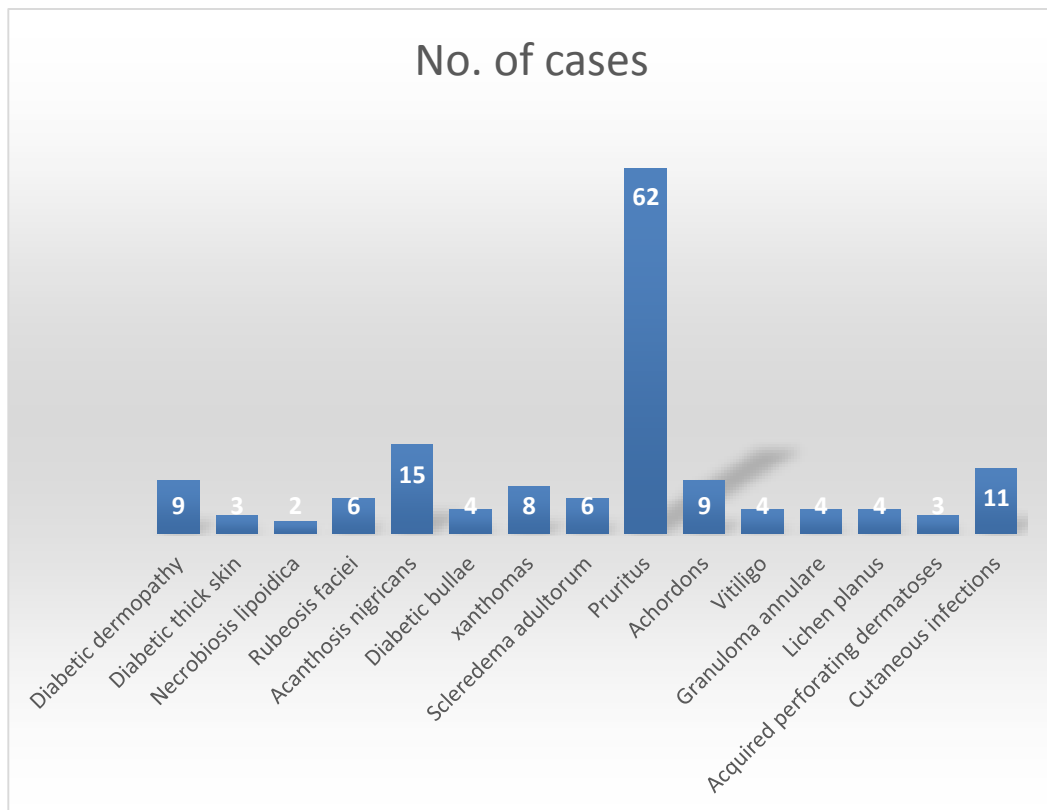
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Table 1
Demographic data of the patients

Demographic	Type I DM	Type 2 DM	p-value
Number of patients	70	80	
Mean age	35.69	42.26	0.22
Mean duration of DM (years)	7.2	8.6	0.86
FBS	163.35	192.38	0.33
HbA1c	8.5	9.5	0.74



Graph 1. Cutaneous manifestations of DM in patients