



## PREVALENCE OF CUTANEOUS MANIFESTATIONS OF DIABETES MELLITUS IN NORTH INDIA

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### ABSTRACT

Type 2 Diabetes Mellitus is one of the most common non communicable diseases seen worldwide .More than one third of diabetic patients have some type of dermatologic manifestations during the course of their chronic disease<sup>1</sup>. The association of certain skin diseases with diabetes mellitus has been fairly well recognized with an incidence rate ranging from 11.4%<sup>2</sup> to 66%<sup>3</sup>.

**Objectives:** This study was undertaken to find out the pattern of cutaneous manifestations in Diabetes patients attending OPD at civil hospital Sundernagar.

**Method and material:** This is a hospital- based observational study conducted in the OPD basis between September 2020 to September 2021. A total of 100 patients were included in the study. History and clinical examinations were performed and the data were recorded and analyzed.

**Results:** The age of the patients ranged from 20 years to 85 years with the mean age of 51.7+12.13 years. Among the 100 patients of diabetes mellitus, there were 36(36%) males and 64(64%) females. Among the cutaneous disorders commonly associated with diabetes, infections were the most prevalent. 62(62%) out of 100 patients had skin infections.

**Conclusions:** Patients with Diabetes can present with variable cutaneous disorders. Cutaneous infections mainly fungal and bacterial formed the largest group of cutaneous manifestations in this study,emphasizing the need for adequate management of diabetes mellitus. Among infections, fungal infections were found to be the most common.

### KEYWORDS :

#### INTRODUCTION

Diabetes mellitus (DM) leads to a variety of multisystem complications involving the cardiovascular, dermatological, ocular, renal, and the nervous system during the course of the disease progression. Dysregulated carbohydrate metabolism, other altered metabolic pathways, atherosclerosis, microangiopathy, neuronal degeneration, impaired host immunity and epigenetics play a role in such complications. Studies by <sup>4</sup>Gilgor and Lazarus showed that at least 30% of patients with diabetes mellitus have some type of cutaneous involvement during the course of their disease. Many classifications delineating dermatological manifestations observed in DM have been proposed. However <sup>5</sup>Sehgal and Shanker opined that no diseases of the skin are absolutely peculiar to diabetes, except three dermatoses the incidence of which is more common in diabetics compared to non-diabetics. Multiple factors play a role in the manifestations of cutaneous signs of diabetes mellitus. Thus we aimed to study the prevalence and nature of cutaneous manifestations in diabetic patients.

#### METHODS & MATERIAL

This is a Hospital based observational study conducted in Civil hospital Sundernagar, between September 2020 to September 2021. Diabetic patients attending the Medicine OPD were included. A total of 100 patients were included in the study. 36% were males and 64% females. Informed consent was obtained. A detailed history was taken with particular importance to cutaneous complaints including details regarding history of evolution, progression, duration and treatment. Clinical examination included general physical examination followed by a meticulous examination of the lesion to make a diagnosis and investigations such as 10% KOH smear where required. Diabetes control was evaluated by available HbA1c levels, FBS, PPBS levels. Numerical data was presented as numbers and standard deviation and categorical data was presented as numbers and percentage. IBM -SPSS 20 software was used for statistics. p value of less than 0.001 was taken as significant.

#### RESULTS

A total of 100 patients who were diagnosed as diabetes mellitus and had skin manifestations were included in the study and evaluated for the nature and distribution. 36% were male and 64% females. Infections were found to be the most prevalent, 62 out of 100 patients(62%) had skin infections and 38(38%) had non-infective skin manifestation. Of the total 62%

cases with infections, fungal infections were the commonest and were seen in 39(62.9%) patients, followed by bacterial infections in 20(32.3%) and viral infections 3(4.8%).

Various non-infective dermatoses were noted among the 38 diabetic patients. The most common findings were non specific pruritis and dry skin seen in 9(23.6%) patients each. Prurigos, mainly on limbs were seen in 6(15.7%) patients. Seborrhoeic dermatitis and hand eczema was seen in another 3(7.9%) cases. Dermatoses strongly associated with DM including, acanthosis nigricans, granuloma annulare, diabetic dermopathy were seen in 6(15.8%), 3(7.9%), 1(2.6%) and 1(2.6%), patients respectively.

#### DISCUSSION

Diabetes mellitus is a metabolic syndrome which commonly involves the skin. Cutaneous manifestations of diabetes mellitus may appear prior to onset of other clinical signs and symptoms or appear subsequent to the development of the disease. Sometimes they may be the first presenting signs<sup>6</sup>. Immune dysregulation, chronic vascular or neurological dysfunction, dyslipidemia, advance glyated end products may be the contributing factors. Cutaneous manifestations were more commonly seen in females which was in accordance with the study by Mahajan et al<sup>7</sup> and Romano et al<sup>8</sup>. In our study, cutaneous infections were found to be the most common cutaneous manifestations seen in 62% of the cases which was in accordance with the study by Nigam and Pande<sup>9</sup>. The pathophysiological factors could be abnormal microcirculation, abnormal phagocytosis hypohidrosis, peripheral vascular disease, diabetic neuropathy, impaired leukocyte adherence, and delayed chemotaxis. In this study, cutaneous fungal infections were the most common and were seen in 62.9%(39) of the cases, followed by bacterial infections in 32.3%(20) and viral 4.8%(3). Dendrea et al<sup>10</sup> also showed cutaneous fungal infections to be the most common infection among diabetics and were seen in 30.4%(68) of the cases, followed by bacterial infections in 16.5%(37) and viral infections in 1 patient. Among the non-infective dermatosis, non specific pruritis and xerosis were the second most common manifestation, and were seen in 23.6% patients. A study by Rao and Pai<sup>11</sup> similarly reported that pruritis was the main presenting symptom and was noted in 60.23% patients in their series. Xerosis in diabetics may be due to dehydration as autonomic nervous system is involved by the disease process.

## CONCLUSION

Diabetes Mellitus may present with a variable spectrum of cutaneous disorders. Cutaneous infections formed the largest group of dermatoses in this study. Increased incidence of cutaneous infections mainly fungal and bacterial was noticed in majority of the uncontrolled diabetics emphasizing the need for adequate and more aggressive management of diabetes mellitus. Among infective dermatoses, fungal infections were the most common. The cutaneous manifestations of diabetes mellitus are due to multiple factors including abnormal carbohydrate metabolism, other altered metabolic pathways, microangiopathy, atherosclerosis, neuron degeneration and impaired host defense mechanisms. The manifestations should be meticulously noted in all diabetic patients, as early diagnosis and management can reduce morbidity.

## REFERENCES

1. Greenwood AM. A study of skin in 500 diabetics. *JAMA* 1927; 89: 774-779.
2. American Diabetes Association: Diagnosis and Classification of Diabetes Mellitus. *Diabetes Care* Jan 2012; 35: S11-S63.
3. Chhabra SAN. Cutaneous manifestations in diabetes mellitus. Thesis submitted to Delhi University in 1978
4. Giligor RS, Lazarus G S. Skin manifestations of diabetes mellitus. In, *Diabetes Mellitus*, eds Rifkin H, Raskin P, Brady co, Louana 1981, 313-321.
5. Sehgal VN, Sanker P Some aspects of skin diseases and diabetes mellitus. *Indian J Dermatol Venereol* 1965; 31: 264 - 269.
6. Pavlović MD, Milenković T, Dinić M, Misović M, Daković D, Todorović S, et al. The prevalence of cutaneous manifestations in young patients with type 1 diabetes. *Diabetes Care*. 2007; 30: 1964-7.
7. Mahajan S, Karanne RV, Sharma SK. Cutaneous manifestation of diabetes mellitus. *Indian J Dermatol Venereol Leprol*. 2003; 69: 105-8
8. Romano G, Moretti G, Di Benedetto A, Giotre C, Di Cesare E, Russo G et al. Skin lesions in diabetes mellitus: prevalence and clinical correlation. *Diabetes Res Clin Pract* 1998; 39: 101-106.
9. Nigam PK, Pande S. Pattern of dermatoses in diabetics. *Indian J Dermatol Venereol Leprol* 2003; 69: 83-5.
10. Dependra Kumar Timshina, Devinder Mohan Thappa, and Aparna Agrawal. A Clinical Study of Dermatoses in Diabetes to Establish its Markers, *Indian J Dermatol*. 2012 Jan-Feb; 57(1): 20-25
11. Rao GS, Pai GS. Cutaneous manifestation of diabetes mellitus. *Indian J Dermatol Venereol Leprol*. 1997; 63: 232-4.