

Dermatological Manifestations in Diabetes Mellitus at NGMCTH Kohalpur

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ABSTRACT

Background: Skin is the largest and most visible organ in the body. It undoubtedly determines to a great extent our appearance and plays a major role in socio-sexual communication. More than one third of diabetic patients have some type of dermatologic manifestations during the course of their chronic disease¹. The association of certain skin diseases with diabetes mellitus has been fairly well recognized with an incidence rate ranging from 11.4%² to 66%³. At least 30% of patients with diabetes mellitus have some type of cutaneous involvement during the course of their chronic disease⁴. Skin sugar levels run parallel to the blood sugar levels⁵. Skin changes generally appear subsequent to the development of DM but may be the first presenting sign or even precede the diagnosis by many years. Among the many skin manifestations in DM, none is pathognomonic of this disease⁶. Cutaneous findings in DM can be classified into four categories: (1) skin disease with strong association and others with less distinct association with DM, (2) cutaneous infections, (3) dermatological disorders related to diabetic complications, and (4) skin conditions related to diabetes treatment⁷. **Objectives:** This study was undertaken to find out the pattern of Dermatological manifestations in Diabetes patients attending Nepalgunj Medical College Teaching Hospital, Kohalpur. **Method and material:** This is a hospital-based descriptive study conducted in the Department of Dermatology, Venereology and Leprology of Nepalgunj Medical College Teaching Hospital, Kohalpur between September 2013 to August 2014. 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. The most common age groups were 46-55 years (36%) followed by 56-65 years (24.7%) and 36-45 years (17.3%), 66-75 years (9.3%), 76-85 years (12.7%). Among the 100 patients of diabetes mellitus, there were 44(44%) males and 56 (56%) females. Among the cutaneous disorders commonly associated with diabetes, infections were the most prevalent. 59(59%) out of 100 patients had skin infections. **Conclusions:** Patients with Diabetes can present with array 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 diabetics emphasizing the need for more aggressive management of diabetes mellitus. Among infective dermatoses, fungal infections were the most common, with Candidal infections being more common than dermatophytosis.

Key words: *Dermatoses, diabetes mellitus*

INTRODUCTION

Diabetes is one of the first diseases described and mention of the symptoms of diabetes has been found since ancient times. Egyptian physician Hesy-Ra of the 3rd Dynasty makes the first known mention of diabetes- found on the Ebers Papyrus- and lists remedies to combat the "passing of too much urine". The term diabetes was coined by Aretaeus of Cappadocia, a Greek physician who in 250 BC gave the first complete medical description of diabetes, which he linked to "the melting down of flesh and limbs into urine"⁸. The term "mellitus" or "from

honey" was added by the Britain John Rolle in the late 1700s to separate the condition from diabetes insipidus which is also associated with frequent urination⁹. The term diabetes mellitus describes a metabolic disorder of multiple etiologies characterized by chronic hyperglycaemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both.

The effects of diabetes mellitus include long-term damage, dysfunction and failure of various organs. These range from autoimmune destruction of the β cells of the pancreas with consequent insulin deficiency to abnormalities that result in resistance to insulin action^{10,11}. WHO estimated a prevalence of 511,000 cases of diabetes in Nepal for 2010 and this figure is expected to more than double to over 1.07 million by 2030 with a mean annual increment of 28,000 cases¹¹.

Diabetes affects every organ system and the skin is no exception.¹² Cutaneous infections are more common in Type 2 diabetes, whereas autoimmune-related lesions are more common in Type 1¹³. The association of certain skin diseases

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with diabetes mellitus has been fairly well recognized with an incidence rate ranging from 1.4% to 66%^{3,8}. Multiple factors play a role in the manifestations of cutaneous signs of diabetes mellitus. Abnormalities in the metabolism of carbohydrates, alteration of metabolic pathways, vascular involvement in the form of atherosclerosis, microangiopathy and neuronal involvement in the form of sensory, motor and autonomic neuropathies and impaired host mechanisms, all play a role.

METHODS & MATERIAL

This is a Hospital based retrospective study conducted in the Department of Dermatology and Venereology, Nepalgunj Medical College Teaching Hospital Kohalpur, between September 2013 to August 2014. Diabetic patients attending the diabetic clinic of NGMCTH, Kohalpur Medicine OPD and Dermatology OPD with skin manifestations were included. A total of 100 patients were included in the study.

44% were male and 56% females. Informed consent was obtained. A detailed history was elicited with particular reference to cutaneous complaints and including details regarding duration, history of evolution, progression and treatment modalities. Clinical examination included general physical examination followed by a meticulous examination of the lesion done to make a diagnosis and investigations such as 10% KOH smear where required. Control of Diabetes was assessed by available HbA1c levels, FBS, PPBS levels.

RESULTS

A total of 100 patients who were diagnosed as diabetes and had skin problem were included in the study and were evaluated for the type of skin manifestations. The most common age group of diabetic patients with skin manifestations were in 4th to 5th decades (36%).

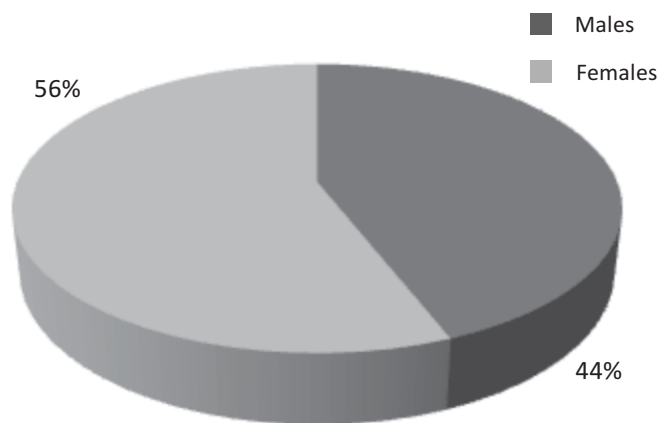


Figure 1: Gender distribution

Among the cutaneous disorders commonly associated with diabetes, infections were the most prevalent, 59 out of 100 patients had skin infections and 41 had non-infective dermatosis. Of the total 59% cases with infections, fungal infections were the commonest and were seen in 36(61.01%) patients, followed by bacterial infections in 18(30.5%) and viral infections 4(6.77%) and parasitic infestation 1(1.69%).

	Frequency	(%)
Fungal	36	61.01
Bacterial	18	30.5
Parasitic	1	1.69
Viral	4	6.77

Table I: Pattern of infective dermatoses in diabetic patients

Candidal Infection	Frequency	(%)
Intertrigo	15	41.66
Vulvovaginal Candidiasis	2	5.5
Candidal Balanoposthitis	6	16.66
Dermatophytic infections		
Onychomycosis	2	5.55
Tinea pedis	1	2.77
Tinea corporis	4	11.11
Tinea incognito	3	8.33
Tinea cruris	3	8.33

Table II: Pattern of fungal infection in diabetic patients

Bacterial Infections	Frequency	(%)
Folliculitis	4	22.22
Furunculosis	8	44.44
Abscess	4	22.22
Carbuncle	1	5.55
Cellulitis	1	5.55

Table III: Pattern of bacterial infection in diabetic patient

Pattern of Non infective dermatoses in diabetic patients

Various non-infective dermatoses were noted among the 41 diabetic patients. Few patients had more than one manifestation. The most common findings were pruritis (localized or generalized without any skin lesions) and xerosis seen in 7(17.07%) patients each. Prurigos, mainly on limbs were seen in 4(9.75) patients. Eczema of various forms including seborrheic dermatitis and hand eczema was seen in another 2(4.87%) cases. Dermatoses strongly associated with DM including, acanthosis nigricans, bullosa diabeticorum, granuloma annulare, diabetic dermopathy, necrobiosis



Figure 2: Carbuncle at the back of the neck



Figure 3: Acanthosis nigricans

lipoidica were seen in 5(12.9%), 3(7.31%), 1(2.43%), 1(2.43%), and 1(2.43%) patients respectively. Few patients had other skin conditions less associated with diabetes such as vitiligo in 3(7.31%)patients, acrochordi in 2(4.87%) patients and pigmented purpuric dermatosis in 1(2.43%) patient and others 4(9.75%).

DISCUSSION

Diabetes mellitus is a disease which commonly involves the skin. Cutaneous manifestations of diabetes mellitus generally appear subsequent to the development of the disease, but may be the first presenting signs, and in some cases they may precede the primary disease manifestation by many years¹⁴. Some diabetes-associated skin conditions are a direct result of the metabolic changes such as hyperglycemia and hyperlipidemia, in addition to other contributing factors, which

include progressive damage to the vascular, neurological or immune system. Minor skin manifestations are ignored by the patients and they seek help of the doctor only if there is any major problem which does not heal with ordinary medications. In this study, the most common age group of diabetic patients with cutaneous manifestations is between 46-55 years, whereas in a study by Mashkoo ahmed et al¹⁵ of 51- 60 years. Bhat et al¹⁶ and Mahajan et al.¹⁷ in their studies on diabetes mellitus, documented the most common age group of the study population, with or without dermatoses, to be of 41 – 50 years in 33.3 and 33% of the patients, respectively.

The female predominance was seen in our study similar to the findings of Mashkoo ahmed et al¹⁵ Mahajan et al¹⁷ and Romano et al¹⁸. A study by Ahmed et al¹⁵ also indicated that skin diseases were more prevalent in women than in men. Binkley¹⁹ and Danowsky et al²⁰ whereas observed a higher incidence of cutaneous diseases among male diabetics. Also a study from Sargodha, Pakistan found skin disorders more in men than women²¹.

In this study, cutaneous infections were the most common cutaneous manifestations seen in 59% of the cases, Similar to the observation of our study, Nigam and Pande²² and Ahmed et al¹⁵ found cutaneous infections to be the most common dermatoses in their studies. The increased incidence of cutaneous infections in diabetes may be related to abnormal microcirculation, hypohidrosis, peripheral vascular disease, diabetic neuropathy, decreased phagocytosis, impaired leukocyte adherence, and delayed chemotaxis^{23,24}. In this study, cutaneous fungal infections were the most common and were seen in 61.01%(36) of the cases, followed by bacterial infections in 30.5%(18) and viral 6.77%(4) and parasitic 1.69%(1). Dependra et al²⁵ 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 case.

Among the non infective dermatosis Pruritus and xerosis were the second most common manifestation, and were seen in 17.07% patients. Generalized pruritus is not specifically associated with diabetes mellitus, although pruritus vulvae and balanitis may be the presenting symptoms of diabetes²⁴. Itching in elderly diabetics could be a manifestation of xerosis. Pruritus was also the second most common finding in Mahajan et al's¹⁷ study. Rao and Pai⁷ also found that pruritus was the main presenting symptom and was noted in 60.23% patients in their series. Xerosis in diabetics may be due to the normal xerotic process of the elderly or as a result of dehydration due to autonomic nervous system involved by the disease process²⁶.

CONCLUSION

Patients with Diabetes can present with array 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 more aggressive management of diabetes mellitus. Among infective dermatoses, fungal infections were the most common, with Candidal infections being more common than dermatophytosis.

In bacterial we had folliculitis forming the major group. Other commonly seen dermatoses were pruritus without any skin lesions, xerosis, prurigo, achrochordon, acanthosis nigricans, granuloma annulare, seborrheic keratosis. 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 actively sought in all diabetic patients, as early diagnosis and management can reduce morbidity.

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