



SPECTRUM OF MUCO-CUTANEOUS MANIFESTATIONS OF DIABETES MELLITUS IN JHARKHAND

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ABSTRACT

Introduction: Diabetes mellitus is characterized by raised fasting and post prandial blood glucose levels and a variety of multisystem complications. It is fast gaining the status of potential epidemic in India. Skin is affected by the acute metabolic derangements as well as by chronic degenerative complications of diabetes. **Aim:** To study the prevalence and the pattern of muco-cutaneous manifestations among diabetic patients to aid in better management of diabetic skin diseases. **Materials and Methods:** Three hundred consecutive patients with the diagnosis of diabetes mellitus and seeking treatment for skin lesions in the OPD of Department of Dermatology in Rajendra Institute of Medical Sciences, Ranchi were included in the study. **Results:** Diabetic patients accounted for 7.2% of Dermatology OPD attendance with a male preponderance (M:F::1.4:1) The common skin disorders for which patients seeking treatment were: Superficial fungal infections (24%), Acrochordons (17.7%), xerosis (13.7%) and bacterial infections (7.4%). **Conclusions:** Skin problems are quite common among diabetic population. Most of the dermatoses were infectious in nature. The early detection of muco-cutaneous manifestations in DM is of utmost importance to be able to avoid and/or properly manage the complications and prevent disability.

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INTRODUCTION

Diabetes is fast gaining the status of a potential epidemic in India with more than 62 million diabetic individuals currently diagnosed with the disease.^[1,2] The population in India has an increased susceptibility to diabetes mellitus.^[3] According to Wild *et al.* The prevalence of diabetes is predicted to double globally from 171 million in 2000 to 366 million in 2030 with a maximum increase in India.^[4] The International Diabetes Federation (IDF) estimates the total number of diabetic subjects to be around 40.9 million in India and this is further set to raise to 69.9million by the year 2025.^[5]

Once regarded as a single disease entity, diabetes is now seen as a heterogenous group of diseases, characterized by a state of chronic hyperglycemia, resulting from a diversity of aetiologies, environmental and genetic, acting jointly.^[6] Approximately one third of all diabetics develop skin lesions during the disease course.^[7] The skin is affected by the acute metabolic derangements and the chronic degenerative complications of diabetes. Although the mechanism for many diabetes-associated skin conditions remains unknown, the pathogenesis of others is linked to abnormal carbohydrate metabolism, other altered metabolic pathways, atherosclerosis,

microangiopathy, neuron degeneration, and impaired host mechanisms.^[8] Autoimmune skin lesions are more common in type 1 diabetes while non-infectious involvement of the skin is more prevalent in type 2 diabetes. Skin manifestations usually appear during the course of the disease in patients known to have diabetes, but they may also be the first presenting sign of diabetes or may precede diagnosis by several years.^[9] This study was designed to analyze the prevalence and pattern of muco-cutaneous manifestations among diabetic patients in Jharkhand.

MATERIALS AND METHODS

The study was conducted in the Departments of Dermatology, Venereology & Leprosy, in a tertiary care centre in Jharkhand, over a period of one year from August 2016 to July 2017. Three hundred consecutive patients with the diagnosis of diabetes mellitus and having muco-cutaneous lesions constituted the study population. The muco-cutaneous lesion for which the patient was seeking treatment was taken into consideration. Gestational diabetes, HIV, malignancies, those on dialysis, immunosuppressive drugs and those not consenting to participate in study were excluded. The clinical details regarding age, sex, occupation, type and duration of diabetes mellitus, family history and treatment modalities were noted.

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Complete physical examination along with local examination of lesions, complete blood picture, fasting and postprandial blood sugar, HbA1c were done in all cases. Serum lipid profile, serum creatinine, and fundus examination were done to detect complications. Relevant microbiological and histopathological investigations to confirm the diagnosis were carried out.

RESULTS

Among the 300 diabetics studied, 176 were males and 124 were females with a male: female ratio 1.4:1. Among 300 patients selected in the study, most of the diabetics belong to 5th and 6th decades of life. The youngest patient in the study group was 19 years old and the oldest patient was 75 years of age. [Table 1]

Table 1 Age distribution of Diabetic patients studied

S.N	Age Group (in years)	No.of patients	Percentage
1.	0 – 10	0	0%
2.	11 – 20	06	2%
3.	21 – 30	12	4%
4.	31 – 40	63	21%
5.	41 – 50	99	33%
6.	51 – 60	90	30%
7.	61 – 70	18	6%
8.	71 – 80	12	4%
Total		300	100%

Out of 300 patients, 58% were Hindus, 34% the Muslims and rest 8% were Christians. Among 176 males; 45.2% were office workers, 28.5% labourers, 16.7% businessmen and 9.5% students. Among 124 females; 62% were housewives, 20.6% office workers, 13.7% labourers and 3.4% students. 111 patients (37%) belonged to the rural region while 189 patients (63%) belonged to the urban regions. Majority i.e. 88% of patients had Non-insulin dependent diabetes mellitus (NIDDM) while only 12% had Insulin dependent diabetes mellitus (IDDM). The duration of diabetes was <5 years in 77 patients (25.7%). 104 patients (34.7%) had 5-10 years of diabetes, 87 had 10-20 years of diabetes (29%). 32 patients had diabetes for >20 years (10.7%). Poorly controlled diabetics (HbA1c >6.5) consisting of 205 (68.3%) patients formed majority of the study group. 95 patients (31.7%) were in well controlled group (HbA1c <6.5). Out of the 300 patients, 24% of patients had family history of Diabetes mellitus (16% had a family history of DM in first – degree relative and 8% had family history of DM in second – degree relatives). Systemic illnesses were found associated with muco-cutaneous manifestations in 30.7% of patients. Among the associated systemic illnesses, hypertension was the most common disease seen in 27 male and 11 female diabetics. [Figure 1] Out of 300 patients, 12% patients were taking injection of human insulin, 60% were on oral sulfonylureas alone and 28% were taking both oral sulfonylureas and biguanides

Various muco-cutaneous manifestations observed in diabetics are shown in Table 2.

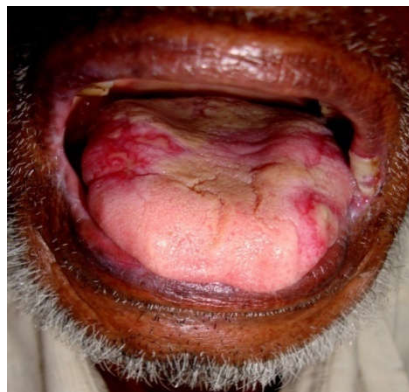


Figure 2 Oral Candidiasis

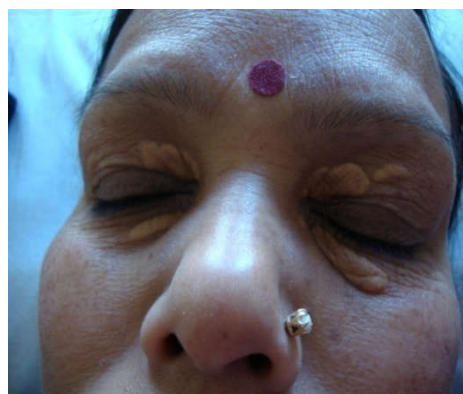


Figure 3 Extensive Xanthelasma



Figure 4 Diabetic foot ulcers



Figure 5 Wide spread Tinea Corporis

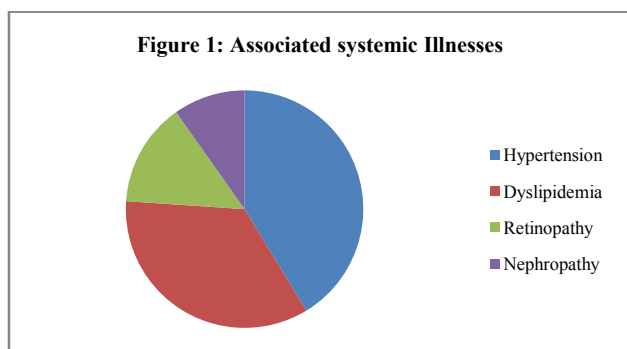
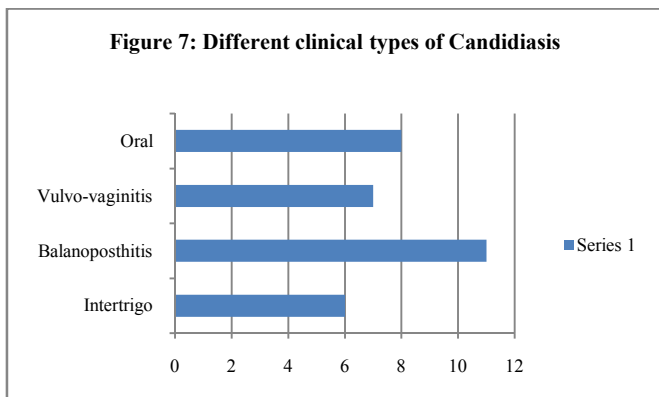
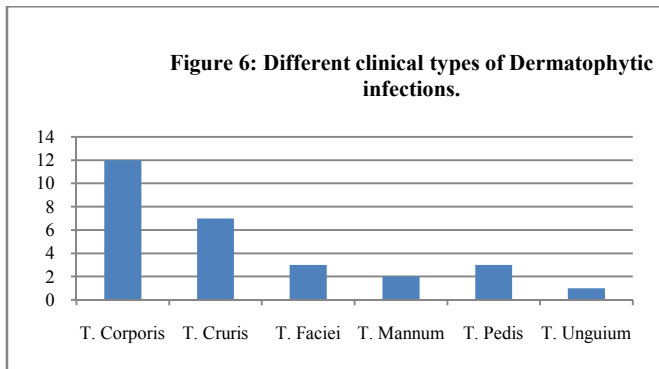


Table 2 Common muco-cutaneous manifestations observed in diabetics

Disease	Males	Females	Total	Percentage (%)
Cutaneous Infections and infestations				
Superficial fungal infections				
Candidal infections	18	13	31	10.3
Dermatophytic infections	14	13	27	9
Pityriasis versicolor	9	5	14	4.7
Bacterial infections				
Folliculitis	7	4	11	3.7
Furuncle	6	2	8	2.7
Cellulitis	1	1	2	0.7
Carbuncle	1	0	1	0.3
Viral infections				
Varicella	1	0	1	0.3
Herpes zoster	3	5	8	2.7
Warts	3	1	4	1.3
Parasitic infestations				
Pediculosis	2	0	2	0.7
Scabies	3	6	9	3
Cutaneous changes that may be associated				
With neurovascular changes				
Diabetic dermopathy	1	0	1	0.3
Diabetic foot	10	4	14	4.7
Progressive Pigmented Purpura	5	1	6	2
Cutaneous changes that may be associated				
With DM				
Xerosis	27	14	41	13.7
Acrochordons	31	22	53	17.7
Acanthosis	6	10	16	5.3
Psoriasis	1	1	2	0.7
Vitiligo	3	4	7	2.3
Xanthelesma	3	8	11	3.7
Miscellaneous				
IGH	5	1	6	2
Eczemas	12	7	19	6.3
Seborrheic Keratosis	2	0	2	0.7
Cherry Angioma	2	2	4	1.3
Total	176	124	300	



DISCUSSION

Cutaneous signs of DM are extremely valuable to the clinician. They generally appear after the primary disease has developed, but may signal or appear coincidentally with its onset, or even precede diabetes by many years.^[10] Cutaneous manifestations of diabetes are classified into four categories: Skin lesions with a strong-to weak association with diabetes (necrobiosis lipoidica, diabetic dermopathy, diabetic bullae, yellow skin, eruptive xanthomas, perforating disorders, acanthosis nigricans, oral leucoplakia, lichen planus), infections (bacterial, fungal), cutaneous manifestations of diabetic complications (microangiopathy, macroangiopathy, Neuropathy) and skin reactions to diabetic treatment (sulfonyleureas or insulin).^[11]

In our study common skin disorders associated with diabetes were Acrochordons(17.7%), Xerosis(13.7%), Candidal infection(10.3%), Dermatophytic infections(9%), Eczemas (6.3%), Acanthosis(5.3%), Diabetic foot(4.7%), Pityriasis versicolor(4.7%), Xanthelesma(3.7%) and Vitiligo(2.3%). In this study, skin tags (acrochordons) were the most common manifestations reported in 17.7% of the patients whereas other studies reported 3.7%,^[12]32%,^[13] and 40.9%.^[14] High insulin levels stimulate keratinocyte proliferation, resulting in the growth of these lesions, and acrochordons may be a cutaneous marker for impaired carbohydrate metabolism.^[15]

Xerosis was second most common disorder associated with diabetes seen in 13.7% in our study Goyal *et al.*^[10] and Shahzad *et al.*^[16] reported 44 and 36.9%, respectively. In DM, dry skin occurs due to impaired skin barrier function and hypohydrosis, which may lower the threshold for itching.^[17] The chronic hyperglycemic condition causes marked decrease in stratum corneum hydration proportional to the disease duration, leading to xerosis.

It is well-known that diabetic patients are susceptible to infections, probably due to hyperglycemia and defects in polymorphonuclear leukocyte function. Among fungal infections, Candidal infection was most commonly reported (10.3%) followed by Dermatophytic infection (9%) and Pityriasis versicolor (4.7%). While among bacterial infections, folliculitis(3.7%) and furuncle(2.7%) were mainly reported. Goyal *et al.* reported that Fungal infections were seen in 16% of the patients (9% had candidiasis and 7% had dermatophytosis) while Bacterial infections were seen in 15% of the patients.^[10] Shahzad *et al.*^[16] reported 28.1% fungal and 5% bacterial infections. Viral (herpes zoster, wart) and parasitic infections (scabies, pediculosis) in diabetic patients were found in thirteen and eleven cases respectively. Vahora *et al.* reported Viral and Parasitic Infestations in 3% and 2.3% cases, respectively.^[18] As shown previously, cutaneous infections work as an important marker to diagnose DM.

Acanthosis was observed in 5.3% of the patients while Sanad *et al.*^[19] reported 3% and Goyal *et al.*^[10] reported 8% cases. A canthosis nigricans is believed to evolve from a complex mechanism ultimately resulting in the interaction between excess insulin and insulin-like growth factor-1 receptor present on keratinocytes and fibroblasts. This interaction stimulates epidermal cell proliferation, leading to the clinical manifestation of hyperkeratosis and acanthosis.^[20] Diabetic foot was seen in 4.7% of the patient in our study. In total, it is estimated that 15% of patients with diabetes will suffer from DFU during their lifetime.^[21] Although accurate figures are difficult to obtain for the prevalence of DFU, the prevalence of this complication ranges from 4%-27%.^[22,23,24] The pathophysiology of diabetic foot ulcers has neuropathic, vascular, and immune system components, which all show a base relationship with the hyperglycemic state of diabetes.^[25,26]

Xanthelasma was reported in 3.7% of the patients. Goyal *et al.*^[8] and Sanad *et al.*^[18] reported 10% in their study. Diabetic patients often suffer from high lipid (cholesterol and triglycerides) levels in the blood. This causes fat to be deposited in the skin and presents as xanthomas or xanthelasma.

Vitiligo was reported in 2.3% % of our patients while Vahora *et al.*^[18] reported 3.33% and Ahmed *et al.*^[12] reported 5.7%. Vitiligo and diabetes may have a causal relationship and both are associated with autoimmunity. Familial hereditary tendencies occur in both diseases. There are neuropathic complications in diabetes, and in vitiligo, a dermatodermal variety occurs with evidence of degenerated nerve endings. In diabetes, the products of oxidative stress, free radical generation, and release of various growth factors may be cytotoxic, affecting melanogenesis.^[27]

In this study the prevalence of skin manifestations was higher in type II than in type I diabetic patients, especially cutaneous infections, and as the duration of diabetes increased, the likelihood of developing skin manifestations also increased.

CONCLUSION

In conclusion, this study throws light on the importance of the early detection and the understanding of the pathogenesis of skin manifestations in DM, to be able to avoid and/or properly manage the complications and prevent disability. Patient with multiple skin manifestations must be evaluated for DM. The frequency of cutaneous infections as well as diabetes-related dermatoses was higher among the diabetics than among nondiabetics. A good glycemic control definitely reduces the incidence and severity of cutaneous disorders. Long-term effects of DM on the microcirculation and on dermal collagen eventually result in skin disorders in almost all the diabetic patients. Thus, dermatologists play an important role in reducing the dermatologic morbidity, improvement of quality of life, and management strategy.

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Conflicts of Interest

There are no conflicts of interest.

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