A STUDY ON THE CUTANEOUS CHANGES IN DIABETES MELLITUS
Sharath Kumar B.C, Shilpita, M.G. Gopal, Ramesh M, Nandini, Divya Gupta

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ABSTRACT: BACKGROUND: Cutaneous manifestations of diabetes mellitus generally appear subsequent to the development of the disease, but they may be the first presenting signs and in some cases they may precede the primary disease manifestation by many years. AIM: To study the different cutaneous manifestations in patients of type1 and type 2 Diabetes Mellitus and to correlate the findings with glycosylated Hb (HbA1c). MATERIALS AND METHODS: A cross sectional, descriptive, analytical study of 100 patients coming to the OPD of the Dermatology Department/ Medicine Department or Ward was done between May 2011 and July 2011. Those with gestational diabetes were excluded. Detailed history, clinical examination and relevant investigations were done to diagnose diabetic complications and cutaneous disorders. RESULTS: In the study conducted on hundred subjects, aged between thirty and sixty five years, 44% were female and 56% were male. The number of cases having HbA1C more than 6.5% were 56 out of the 100 subjects. It was seen that 31 subjects (31%) had skin manifestations associated with DM, 23 subjects (23%) had cutaneous infections, 27 subjects (27%) had vascular manifestations of DM, 2 subjects (2%) had diabetic neuropathy and 6 subjects (6%) had other skin manifestations. CONCLUSION: Well-controlled diabetes decreases the prevalence of DM-specific cutaneous disorders. Cutaneous infections formed the largest group of dermatoses in DM.

KEYWORDS: Cutaneous manifestations, dermatoses, diabetes mellitus

INTRODUCTION: Diabetes is clinically and genetically a heterogenous group of disorders characterized by abnormally high levels of glucose in the blood [1] often accompanied by abnormalities in carbohydrate, fat and protein metabolism. Diabetes mellitus has emerged as a major public health problem in our country, and our country has a distinction of having the largest number of diabetics in the world. Skin is affected by both acute metabolic derangements and the chronic degenerative complication of diabetes [2]. 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 [3]. The prevalence of cutaneous infections occurs more commonly in DM Type 2 whereas autoimmune lesions are commonly seen in DM type 1 [4]. Among the many skin manifestations in DM which vary from trivial to life threatening, none is pathognomonic of the disease [4]. It is suggested that these skin changes may eventually be used as a reflection of the patient’s current as well as past metabolic status. A study of the dermatological manifestations in diabetics may enlighten us on the various manifestations and help in early diagnosis of diabetes, along with effective management. Only few studies of this type from this region of the country exist, hence this study was undertaken.
MATERIALS AND METHODS: The study was conducted in the Outpatient Department and wards of General Medicine and Dermatology and STD Department, of a tertiary care institute, between May 2011 and July 2011. Institute ethical clearance was obtained before the start of the study. One hundred consecutive consenting diabetic patients between 30 – 65 years of age were included in the study group and those patients not willing to take part in the study and those with gestational diabetes were excluded from the study. Detailed history including demographic data, duration and type of diabetes, type of treatment taken and chief complaints relating to skin, onset, evolution and duration of the skin lesions, past or family history of similar lesions and associated skin or medical disorders were elicited and recorded on a proforma. A complete cutaneous examination was done in all cases to observe for the presence of any specific or non-specific dermatoses. The type of skin lesions and the site of involvement were recorded. Relevant systemic examination was carried out. Investigations like fasting and postprandial blood glucose, HbA1c, complete hemogram, liver and renal function tests, lipid profile, 24-hour urinary protein were done. Bedside laboratory procedures like the Tzanck smear, KOH mount, and Gram’s stain were carried out. To confirm the diagnosis, a skin biopsy was done in a few cases. The results were tabulated and analyzed.

RESULTS: In the study conducted on hundred subjects, aged between thirty and sixty five years, 44% were female and 56% were male. Out of the 100 subjects, two were between the age group of 30-34yrs, seven were between the age group of 35-39yrs, eleven were between the age group of 40-44yrs, seven were between the age group of 45-49yrs, eight were between the age group of 50-54yrs, seventeen were between the age group of 55-59yrs, forty eight were between the age group of 60-65yrs.

It was seen that 31 subjects (31%) had skin manifestations associated with DM, 23 subjects (23%) had cutaneous infections, 27 subjects (27%) had vascular manifestations of DM, 2 subjects (2%) had diabetic neuropathy and 6 subjects (6%) had other skin manifestations. The number of cases having HbA1c more than 6.5% were 56 out of the 100 subjects. Out of which 35.57% had skin manifestations associated with DM, 28.56% had cutaneous infections, 17.85% had vascular manifestations of DM, 3.57% had diabetic neuropathy, and 3.57% of the cases had other manifestations nonspecific to DM.

DISCUSSION: In the Study conducted, 56% were males and 44% were females which could have had a bearing on the results seen.

Thus 31% of the subjects had manifestations that were Specific to DM, and 69% of the subjects had manifestations that were nonspecific to DM. Multiple responses were recorded in the subjects.

In spite of diabetic dermopathy being the most common cutaneous manifestation seen in patients in other studies, skin manifestations which are nonspecifically associated with DM (31%) were the most common manifestation seen. These manifestations include – Xerosis (22%), Yellow Nails, Pruritis, Eczema, Psoriasis, Vitiligo, and Skin Tags. The next most common manifestation seen was Vascular manifestations (27%) - where diabetic dermopathy (11%) was seen. The next most common manifestation was cutaneous infections (23%) - including fungal infections like tinea corporis and tinea cruris, candidiasis, and other infections like cellulitis, pyoderma, and carbuncles. Diabetic neuropathy was seen in 2% of the cases and other manifestations like contact dermatitis,
bouls pemphigoid formed 6% of the cases. Diabetic foot was another manifestation commonly seen.

This shows that the Diabetic patients most often have nonspecific changes in the skin and these can be used as skin markers of DM which can be used to help people to recognize the skin changes that occur in DM and to visit their physician on seeing these minor yet significant changes.

Also out of the 100 subject taken, 56 of them had an elevated level of HbA1c (>6.5%). Most of the patients who had elevated levels of HbA1c were those who had Skin manifestations nonspecifically associated with DM(35.5%) , cutaneous infections(28.56%) and vascular changes in DM formed 17.85% of the subjects having a HbA1c > 6.5% and diabetic neuropathy and other manifestations formed 3.57% each of the subjects having a HbA1c >6.5%

This shows that the skin changes in DM do not have much correlation with the HbA1c levels and that HbA1c has a relation only to the micro vascular changes in DM. This could probably due to the fact that all the patients were known diabetic patients and were on regular insulin therapy.

**CONCLUSION:** This study showed that the cutaneous lesions can serve as cutaneous markers for DM. These can be detected by a simple cutaneous examination. The commonly seen nonspecific skin manifestations can also be used as skin markers for DM. This can be especially useful in the rural areas where advanced facilities are often unavailable. It also shows that elevated levels of HbA1c do not have much effect on the skin manifestations as they are seen in The Cutaneous lesions that are both specific as well as nonspecific to DM.

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The Cutaneous Manifestations of DM
- Skin Manifestations Associated with DM
- Cutaneous Infections
- Vascular Manifestations of DM
- Skin Manifestations of DM
- Diabetic Neuropathy
- Others

![Figure 1](image)

No. of Cases having HbA1c more than 6.5%
- Skin Manifestations Associated with DM
- Cutaneous Infections
- Vascular Manifestations of DM
- Skin Manifestations of DM
- Diabetic Neuropathy
- Others

![Figure 2](image)
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