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CUTANEOUS MANIFESTATIONS IN DIABETES MELLITUS

Dermatology

Dr. Jeyakumari Jeevan
Dr. M. Saranya* * Corresponding Author
Dr. Sowmya
Dr. Vijaykumar Sugumaran

ABSTRACT

Background: Diabetes mellitus is an often encountered chronic disease. Skin is a mirror of internal diseases and hence it reflects the underlying metabolic disorders.
Aim: To assess the cutaneous manifestations in patients with diabetes mellitus.
Materials and Methods: Two hundred consecutive diabetic patients with skin lesions either attending the dermatology out patient department or referred from the medicine department were included in this study.
Results: The common skin manifestations that were encountered in this study were: Dermatophytosis (45%), Acanthosis nigricans(50%) and Dermatosis papulosa nigra(62%).
Conclusion: Diabetes mellitus leads to multisystem damage including skin. High incidence of the above mentioned disorders can be attributed to the humid climate and obesity respectively due to the dietary habits in the region.

KEYWORDS

INTRODUCTION:

Diabetes mellitus commonly addressed as "sugar" in colloquial language is one of the often encountered non communicable chronic disease on a regular basis which is characterized by abnormally elevated levels of blood glucose. Inadequate production of insulin from pancreas and inadequate sensitivity of beta cells of islets of langerhans to the action of insulin is considered as the mainstay etiology for diabetes mellitus. Prevalence of diabetes mellitus tends to increase with age in rural parts of India. Skin is considered to be one of the organ that is affected in diabetes with numerous clinical manifestations. The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030[1].

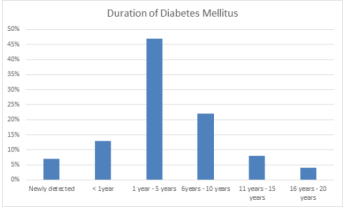
MATERIALS AND METHODS:

The study was conducted in the dermatology department of Shri Sathya Sai Medical college &Research Institute (Deemed to be) Chennai. This is a descriptive study which involves a total number of 200 patients who are clinically diagnosed as diabetes mellitus in the age group of 20yrs to 75yrs after detailed dermatological examination for a period of 9 months. Details regarding age, sex, duration of diabetes mellitus were noted. Apart from the glycemic profile, relevant investigations were done to confirm the diagnosis wherever needed.

RESULT:

The study comprised of 200 patients with skin lesions who were diagnosed with diabetes mellitus. There were 88 males and 112 females. Majority of them affected were between 41 to 50 years of age. The duration of diabetes mellitus was <5 years in 93 patients and 20 years and above in eight patients as shown in Table 1.From this study, it is seen that more cases of cutaneous complications are seen in the initial years of development of Diabetes Mellitus. Fourteen patients were newly diagnosed with diabetes mellitus. Majority of the patients presented with more than one type of skin disorder.

Table 1: Duration of diabetes mellitus



DISCUSSION:

Cutaneous lesions that occur in diabetic patients can be of clinical importance which should not be missed out by the physicians and dermatologists as it can screen the underlying damage caused by the metabolic changes in our body. In some patients the skin changes tend to occur prior to the onset of the diabetes, whereas in some either during the development of the metabolic disorder or after the onset.Cutaneous manifestations of diabetes are classified into four categories as per study done by Romano G et al: Skin lesions with strong-to-weak association with diabetes (necrobiosis lipiodica, 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 (sulphonylureas or insulin).[2]

In our study we found that Dermatophytosis (45%), Acanthosis nigricans(50%) and Dermatosis papulosa nigra(62%) were the most common associated cutaneous lesions in diabetics as shown in figures 1 and 2. Fungal infections are claimed to be the most common form of cutaneous infections in diabetics. Cutaneous dermatophytic infections were found to be common following oral Candida infection in a study done by Thilak S et al[3]. Whereas in our study we found that cutaneous dermatophytic infection was prevalent among 45% followed by Candida infection which was seen only in 30 patients. Pityriasis versicolor was seen in 12%,Pityriasis capitis in 2%,Onychomycosis in 10%,Balanoposthitis was seen in 14%,oral candidiasis in 6%, vulvo vaginal candidosis in 6%,candidal intertrigo in 4%. Among the candidal infections, we found that genital infections were prevalent when compared to cutaneous or oral candidiasis . This can be attributed to weakened immune system due to high blood sugar levels in diabetics. Viral infections like Herpes genitalis and verruca vulgaris was seen in 2 patients each. Bacterial infections like pyoderma in 2%, furunculosis in 4%, folliculitis in 2% and chronic paronychia in 2% were also encountered . One of the patient with furunculosis had carbuncle over the nape of the neck which is shown in figure 3. It is believed that diabetic patients have an increased risk for infectious diseases, although there is little documented evidence to support it [4]. The concept of the skin performing as a temporary reservoir for excess blood glucose may account for the tendency of the skin to develop infections.

Figure 1: Tinea corporis over upper back

Figure 2: Acrochordon over left side of the neck

Figure 3: Multiple furunculosis with carbuncle over the nape of the neck

Among the skin manifestations secondary to diabetes mellitus, Acanthosis nigricans was seen in (50%) of the patients as shown in figure 4 is suggestive of high insulin resistance leading on to stimulation of keratinocytes and fibroblast proliferation through high affinity binding to insulin-like growth factor 1 (IGF-1) receptors in obese patients can contribute to keratinocyte and fibroblast proliferation which is considered as the leading mechanism involved in pathogenesis of diabetes mellitus[5]. Xerosis, considered as abnormal dryness was seen in 26%.This is considered to be as one of the second most common secondary skin manifestation that can be encountered in diabetics. Being a predictor of diabetes, xerosis should not be undervalued. Other skin manifestations secondary to diabetics encountered in the study were pseudo acanthosis nigricans (6%), diabetic bulla(1%), fissure feet(1%), diabetic shin spots(1%), peripheral neuropathy(1%), trophic ulcer(1%), callus(1%), diabetic ulcer(3%), diabetic neuropathy with ulcer(1%), generalized pruritus (6%). Skin manifestations secondary to Diabetes mellitus are shown in figure 5.

Figure 4: Acanthosis nigricans over the neck

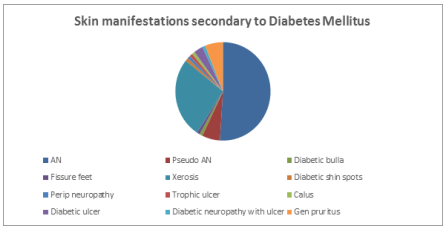


Figure 5: Skin manifestations secondary to Diabetes Mellitus

Dermatosis papulosa nigra and acrochordon was seen in 62% and 38% respectively which seems to be on the higher scale when compared to a study done by Asokan N and Binesh VG who appreciated skin tags in 26 out of 287 diabetic patients[6]. The risk of developing metabolic syndrome is significantly higher in patients with skin tags[7]. Melasma was seen in 6 patients and genital vitiligo was seen in 4 patients. Other pigmentary disorders seen were leukoderma, mucosal vitiligo, vitiligo vulgaris, Lichen sclerosus et atrophicus and Lichen simplex chronicus was seen in two patients each. Cutaneous lichen planus seen in 4 patients and oral lichen planus in 6 patients. In a study done by Timshina et al concluded that vitiligo was associated with diabetes mellitus I and II whereas lichen planus was not[8]. But in our study, both vitiligo and lichen planus are associated with diabetes mellitus. Duff M et al states that the prevalence of lichen planus was noted to be 2 % to 4% among the diabetics. Age related changes like Idiopathic guttate hypomelanosis was seen in 22 patients. Seborrheic keratosis was seen in 20 patients as seen in figure 6. Cherry angiomas and senile comedones were seen in 4 patients each. Syringoma was seen in 2 patients.

Figure 6: Seborrheic keratosis

Acute eczema was seen in 16 patients, chronic eczema in 10,pruritus simplex, frictional hyperkeratosis, pompholyx, asteatotic eczema, allergic contact dermatitis to hair dye and seborrheic dermatitis were seen in two patients each. These findings can be of limited value as eczemas can be more commonly seen among the elderly which could be related to age factor than diabetes per se. Asokan N also stated in his study that the prevalence of eczema in diabetics was not different from non diabetics[6]. Psoriasis was seen in 8 patients. One of the patient had scalp psoriasis with associated frictional dermatitis over the forehead due to religious practices as shown in figure 7. Timshina et al states that psoriasis has been noted to be among diabetics with an increased frequency[8]. Miliaria rubra was seen in 36 patients which can be attributed to the sultry weather.

Figure 7: Scalp psoriasis with cutaneous sign of piety over the forehead

Androgenetic alopecia was seen in 12 patients. Alopecia areata was seen in 4 patients and hirsuitism was seen in 2 patients. Pediculosis capitis and scabies was seen in 2 patients each. Onychodystrophy and onycholysis was seen in 4 patients each. Melanonychia in 2 patients. Amyloidosis was seen in 8 patients. Commonest clinical type being lichen amyloid in 6 patients and macular amyloid in two of them. Fixed drug eruptions were seen among 2 patients with oral hypoglycemic agents. Systemic disorders like hypertension was seen among 86 patients, cardiovascular manifestations, hypothyroidism and bronchial asthma among two patients each. Escalating rates of both diabetes and obesity (diabesity) is due to drastic changes in the human environment, behaviour and way of life which directs the patients towards cardiovascular risk[9].The frequency of central obesity, hypertension and elevated blood lipids are increased in persons with diabetes and this has been called the 'Deadly Quartet'[9].Hence the skin

remains as the early marker and easy diagnostic tool for diverse of internal diseases. The overview of the cutaneous manifestations of Diabetes mellitus is illuatrated in the figure 8.

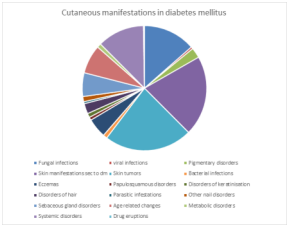


Figure 8: Cutaneous manifestations in diabetes mellitus

CONCLUSION:

Based on the above results, we conclude that the skin is the window to internal diseases. Glucose is present in the normal skin. The skin glucose content parallels that of the blood. This accounts for the greater tendency to develop pruritus, bacterial and fungal infections. Hence skin, nail and hair care is essential during or even before the initial phase of the metabolic disorders sets in; So that it will be easy to treat the cutaneous manifestations at the earliest that occur because of the metabolic disorders.

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