



A PROSPECTIVE STUDY ON CUTANEOUS MANIFESTATIONS IN DIABETES MELLITUS

General Medicine

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ABSTRACT

Diabetes Mellitus is the common non-communicable disease across the world. More than 70% of the Diabetics can have cutaneous lesion during the course of the disease and has received low attention till now. This study was undertaken to estimate the prevalence of Cutaneous lesions in Diabetes and also to determine the relationship with severity. **Materials and Methods:** Study was conducted in 100 type 2 Diabetic patients in Internal medicine out patient department, who were aged above 14 years. Detailed history, clinical examination and relevant investigations were done. **Results:** showed 77% had skin lesions, Skin infection especially fungal infections are the common cutaneous lesion followed by bacterial infections. Skin tags were the other common skin lesion followed by Acanthosis Nigricans. **Conclusion:** Cutaneous manifestation are common in Diabetic patients and more commonly associated with high sugar level and long duration of Diabetes.

KEYWORDS

Diabetes Mellitus (DM), Acanthosis Nigricans (AN), Xerosis, Acrochordrons

INTRODUCTION:

Diabetes Mellitus is the one of Major non-communicable disease worldwide and is responsible for cardiovascular disease, End stage kidney disease, blindness and Amputation of lower extremities. Diabetes Mellitus as earlier known is not a single entity but a complex metabolic disorder in which Hyperglycemia is common Phenotype (1). Number of Diabetics are increasing worldwide with Change in life styles including stress and food habits and increased lifespan. There were around 425 million people suffering from Diabetes as per IDF2021 statistics and the numbers are expected to increase to 629 million by 2045 and India is home for second largest number of Diabetics in the world, there were around 84 million diabetics in 2017 and is expected to increase to 151 million by 2045. (2) Diabetes mellitus remains asymptomatic in majority of the patients. The Classical feature like Polyuria, polydipsia and weight are seen in very few patients. Cutaneous Manifestations are seen in more than 79% of patients with Diabetes (3). Studies have also shown that many Diabetics during the course of the disease develop skin manifestations. (Green Wood AM: A Study of skin in 500 Diabetes: JAMA:1997;89:774-779) . Incidence of cutaneous manifestation are more common in patients with poor glycemic control compare to those with good glycemic control and also with increased duration of diabetes (4). Cutaneous manifestations are more common in Type 2 diabetes than Type 1 diabetes (3).

Cutaneous lesions seen in type 2 DM (3,5)

1. Related Insulin Resistance/Non-Infectious

- Acanthosis Nigricans
- Acrochordrons
- Diabetic Dermopathy
- Eruptive Xanthomas
- Rubiosis Faciei
- Xerosis
- Epidermal Necrolysis

2. Infection Related

- Candidiasis
- Dermatophytosis
- Bacterial Infections
- Viral

Cutaneous Lesions in Type 1 DM

1. Necrobiosis Lipoidica
2. Vitiligo
3. Bullosis Diabeticorum
4. Lichen Planus
5. Psoriasis
6. Xerosis
7. Scleroderma Diabeticorum
8. Granuloma Annulare
9. Onychodystrophy
10. Periungual Telangiectasias

11. Infection related- Fungal/Bacterial/Viral

Acanthosis Nigricans is hyperpigmented, velvety skin fold, usually seen in neck, Axilla and Groin. Acanthosis is the commonest skin manifestation seen in type 2 DM especially in obese. It usually represents Insulin Resistance and is also a prognostic factor in Diabetes. Acanthosis is more common in African Americans compared to whites and Hispanics. **Acrochordrons** are also known as Fibroepithelial Polyps or Skin tags. These are commonly seen over eyelids, Neck, axilla and Groin areas. No treatment required for these lesions unless they are complicated. **Eruptive xanthomas** are usually seen over elbows, Buttocks and knees. They develop suddenly as a crop of yellow papules and also with erythematous base. Studies have shown that many patients with eruptive xanthomas will have high Triglycerides often more than 2000mg/dl. **Rubiosis Faciei**, a rare microangiopathic complication of Diabetes and is commonly associated with Diabetic Retinopathy. Xerosis is dryness of the skin, seen in both Type 1 and type 2 DM.

Infections are seen in both type 1 and type 2 DM. Infections can Fungal or Bacterial. Common cutaneous fungal infection is candidiasis, Dermatophytosis. Vulvovaginitis is common problem in Diabetic women. Bacterial skin infections may be primary or secondary skin infections of the skin. Bacterial skin infection may mild or severe enough to cause morbidity and mortality. Some common types of Bacterial skin infection are Erysipelas, Folliculitis, Furuncle and carbuncles, cutaneous abscess and cellulitis. Common bacteria responsible for skin infection are Streptococci, Staphylococcus, Haemophilus influenza and Pseudomonas Aeruginosa (6). Poor diabetic control is the major risk factor for the bacterial infection, presence of neuropathy, Peripheral vascular disease and trauma increase the risk of bacterial infections.

AIMS AND OBJECTIVES:

This is a prospective study done in Internal medicine outpatient department using a standard proforma to record the data on regular patients with either established Diabetes or New onset Diabetes. Aims of the study is to study the clinical pattern of cutaneous manifestations in Diabetes and also to determine the relationship with severity of Diabetes.

MATERIALS AND METHODS:

Study was conducted for a period of one year at Internal medicine out patient department that included 100 type 2 diabetic subjects. All patients who were above 14 years of age and had skin lesions with established Diabetes as per ADA criteria were included in the study. Those who were on treatment for cutaneous lesions, on steroid therapy, those who had pure Dermatological problems and those with connective tissue disease/vasculitis were excluded from the study. Dermatology Opinion was obtained wherever required. Detailed history was taken, clinical examination was done, all patients underwent investigations like FBS/PPBS/HBA1C.

RESULTS:

Of the 100 subjects, 61 were male and 39 were females. Youngest patient was 22 years and oldest was 78 years. 51 patients were above 50 years, 24 patients were above 60 years. 40 patients had Polyurea, 26 patients had Polydypsia and 30 patients had nocturia. 77 patients had skin lesions. Pruritus was the commonest clinical presentation in 46 patients, 68 Hyperpigmentation or change in skin color was seen in 18 patients, pain as presenting complaint in 13 patients, nail changes were seen in 18 patients. 67 patients had infection, Bacterial in 18, fungal in 45 and Viral in 3 patients. Tenia corporis/cruris was the common Fungal infection and was seen in 16 patients.

Type of Fungal Infection	Numbers
Tenia Corporis/Cruris	16
Balanoposthitis	8
Candidiasis	7
Tenia Versicolor	5
Vulvovaginitis	5
Onychomycosis	4
Total	45

Diabetic dermopathy was seen in 9 patients and Necrobiosis Lipoidica in one patient. Cellulitis was seen in 10 patients, Furuncle in 3 and Folliculitis in 4 patients. Herpes Zoster was seen in 1 patient and Herpes simplex in 2 patients.

Other Dermatological manifestation seen

Skin Lesion	Number
Skin Tags	15
Acanthosis Nigricans	9
Pruritus	6
Chronic dermatitis	3
Psoriasis	3
Ichthyosis	2
Lichen planus	2
Xerosis	2
Xanthoma	2
Vitiligo	1
Lichen Amyloidosis	1
Diabetic foot	1
Seborrheic keratosis	1

Of the 100 subjects, 80 had established Diabetes and 20 were newly detected Diabetes. Duration of Diabetes

Duration	Number
0-6 months	1
6 months to 1 year	3
1-5 years	22
6-10 years	30
11- 15 years	19
>15 years	6
History not available	19

Of the 100 subjects, 27 had Hypertension, 7 had ischemic heart disease and 4 had Bronchial asthma. Glycosylated hemoglobin (HbA1C) was 6.5-7 in 20 patients, 7-8.5 in 35, 8.5-10 in 30 and 15 patients had HbA1C of >10.

DISCUSSION:

Of the study, 61 patients were Male and 39 were females. 77 had skin lesions. 68 patients had symptoms and signs of Infection, Bacterial in 18, Fungal 45 and Viral 3. In the present study, 77% patients had cutaneous manifestations. There several other studies which shows the prevalence of cutaneous manifestations ranges from 30-80% (7). In another study done by Nandini Chatterjee et al also showed the prevalence of cutaneous Manifestations are around 73% (4). In one more study done by Sangeetha Roslind et al had similar results in terms of prevalence of cutaneous manifestations and also showed that in prevalence increase with poor control and the duration of Diabetes (8). Changes in the process of non-enzymatic glycosylation is responsible for cutaneous lesion in Diabetes. With the uncontrolled sugars the process is further enhanced resulting in changes in physical and chemical properties of connective tissues and other body proteins(9). Cutaneous infections occur in close to 50% of patients with poorly controlled diabetes. Presence of Peripheral vascular disease, Neuropathy, impaired immune response increases the risk of cutaneous infections (10). In the present study, the incidence of cutaneous infections is 66%, majority had fungal infections. Tenia

Corporis/ Cruris was the commonest fungal infection the study, followed by Balanoposthitis 8%, Vulvovaginitis 5%. Cellulitis was the most common Bacterial infection in the study (10%), followed by Folliculitis and Furuncle 4% and 4% respectively. Diabetic Dermopathy is considered as the most common cutaneous lesion in Diabetes but is not pathognomonic of Diabetes and seen in almost 7-70% of Diabetics more son men over 50 years of age. In the present study the prevalence was 9%.

Skin tags was the common cutaneous lesion found in the present study (15%). In study done by Kahana et al showed the incidence of skin tags was 26.3% in their study (11). Acanthosis nigricans was found in 9% the patients in the present study. In a study published by sangeetha Roslind et al showed the incidence of Acanthosis was 13%. Psoriasis was seen in 3% in the present study and Xerosis was 2%. The prevalence of Xerosis varies from different studies due to various other factors. Chronic Dermatitis was found in 3%, vitiligo, Lichen Amyloidosis, Diabetic foot and Seborrheic keratosis in one patient each.

In the present study only 20 % patients had HbA1C of 6.5 to 7, rest 80% had uncontrolled Diabetes. Timsa DK et al have shown in their study that majority had good glycemic control but with cutaneous lesions (12). However various other studies have shown that increased incidence of cutaneous lesions with poor glycemic control and long duration of Diabetes.

CONCLUSION:

Diabetes Mellitus is the common non-communicable disease in the world and is responsible for cardiovascular disease, End stage kidney disease. Blindness and lower extremity amputation across the globe. Cutaneous Manifestation are seen in majority of Diabetic patients, more common in type 2 DM compare to Type 1 DM. Studies have shown that cutaneous lesions are more common in the age group of 50-60 years with slight male preponderance. Infections are most common cutaneous lesions and more Fungal infection are commonest infection. However bacterial infection can lead increased morbidity and mortality in Diabetic patients. Among the non-infectious Skin lesion Skin tags, Acanthosis Nigricans and Xerosis are very common and represents Insulin resistance or Hyperinsulinemia. Skin lesions like infections require treatment. Good control of blood sugars is most important. Weight reduction and exercise reduces the condition like Acanthosis. Cutaneous lesions though very common but has received least importance till now.

REFERENCES:

- Alvin C Powers: DM: diagnosis, Classification and Pathophysiology: Harrison's Principle of Internal Medicine: Chapter 417:19th Edition Vol 2:2399-2407
- IDF Diabetes Atlas. Available at: https://diabetesatlas.org/upload/resources/previous/files/8/IDF_DA_8e-EN-final.pdf. Accessed on 27th September 2021 (Page 9).
- Michelle Duff,1 Olga Demidova,2 Stephanie Blackburn,1 and Jay Shubrook: Cutaneous Manifestations of Diabetes Mellitus: CLINICAL. DIABETES JOURNALS. ORG: VOLUME 33, NUMBER 1, WINTER 2015:40-48
- Nandini Chatterjee, Chandan Chattopadhyay1, Nilanjan Sengupta2, Chanchal Das2, Nilendu Sarma3, Salil K Pal: An observational study of cutaneous manifestations in diabetes mellitus in a tertiary care Hospital of Eastern India: Indian Journal of Endocrinology and Metabolism / Mar-Apr 2014 / Vol 18 | Issue 2:217-220
- Ana Luiza Lima1, Tanja Illing1, Sibylle Schliemann1, Peter Elsnser: Cutaneous Manifestations of Diabetes Mellitus: A Review: Am J Clin Dermatol: DOI 10.1007/s40257-017-0275
- Maritza I. Perez, MD, and Steven R. Kohn, MD New Haven, Connecticut: Cutaneous manifestations of diabetes mellitus: Journal of the American Academy of Dermatology April 1994;519-531
- WazidZ. Kanjee: Cutaneous manifestations in diabetes mellitus: J Pak Med Assoc: 1998;48:304-305.
- Sangeetha Roslind1, Kunnummal Muhammed2, K. G. Sajeeth Kumar: Cutaneous manifestations in patients with type 2 diabetes mellitus and normal controls: Journal of Skin and Sexually Transmitted Diseases: Volume 2 - Issue 1 - January-June 2020:26-30.
- Sell OR, Lapolla A, Odelti P et al: Pentosidine formation in skin correlates with severity of complications in individuals long standing Diabetes:1992;41:1286-1292.
- FeringerT, Miller FO: cutaneous manifestations of Diabetes Mellitus: Dermatolclin: 2002;20:483-492.
- Kahana M et al: Skin tags: A cutaneous marker for Diabetes Mellitus: Acta dermatol/Venereol: 1987;67:175-177
- Timsa DK, ThappaDM and Agarwal A: A clinical study of Dermatitis in Diabetes, to establish its markers: Indian J Dermatol:2012;57:20-25