

Skin Manifestations in Patients with Type-II Diabetes Mellitus

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ABSTRACT

Objectives: Our primary objective is to assess the pattern and profile of skin manifestations in patients with Type-II Diabetes Mellitus of age groups ranging from 18 to 80 years.

Methodology: It was a prospective observational study conducted at Department of Medicine, Index Medical College, Hospital & Research centre from March 2015 to August 2016. A total of 300 random cases were included in the study and were followed for the evaluation of various parameters like duration of diabetes, Glycated haemoglobin (HbA1c) and skin manifestations. This study included all diabetic patients newly or previously diagnosed of 18 to 70 years of age group.

Results: In our study we have observed that 60.33% of patients have skin lesions and 39.67% of patients don't have skin lesions. The association between skin manifestations and HbA1c, Statistically significant association was seen between skin tag and HbA1c grading ($P < 0.05$) followed by Diabetic Dermopathy and Bacterial skin manifestations. There was no statistically significant association seen between skin manifestations and duration of diabetes. Among all skin manifestations in accordance to the gender, fungal skin manifestations were found to be highest in females in comparison to males.

Conclusion: We concluded that majority of the patients with skin lesions were not having good glycemic control as there HbA1c were above normal range. Skin manifestations like bacterial, viral, keratosis and vitiligo were more commonly observed in males.

Keywords: Type-II Diabetes Mellitus, Glycated haemoglobin, skin manifestations, Diabetic Dermopathy keratosis, vitiligo and Bacterial skin manifestations.

INTRODUCTION

Diabetes Mellitus (DM) is the most common endocrine disorder having a feature of Hyperglycaemia. Overall number of Diabetic patients globally in 2030 is estimated around 550 million. According to International Diabetes Federation (IDF) total number of diabetic patients in India is around 61.3 million and till 2030 it would be around 101.2 million. The study was designed to evaluate the prevalence and

pattern of skin manifestations among all type 2 Diabetic patients in Department of general medicine at Index medical college, Indore. Almost one third of patients have some type of dermatological manifestations. With duration of diabetes, the skin of all patients is affected in some form or another. Cutaneous signs of DM such as diabetic bullae, diabetic dermopathy, Necrobiosis lipoidica diabetorum and scleroderma-like syndrome of waxy skin with limited joint

mobility are extremely valuable to the physician for the diagnosis of diabetes.

OBJECTIVES OF THE STUDY

To assess the pattern and profile of skin manifestations in patients with type 2 Diabetes Mellitus

To evaluate the prevalence of skin manifestations in patients of type 2 Diabetes Mellitus ranging from age groups of

18-50 years

50-80 years

Relationship of HbA1c and skin manifestations in type 2 diabetes mellitus. HbA1c ranging from less than 7 and more than 7 ranging from 7 to 9, 9 to 11, more than 11

Relation of skin manifestations with duration of diabetes

To evaluate the difference of skin manifestation occurring in male and female diabetics

MATERIALS AND METHODS

It was a prospective observational study conducted at Department of Medicine, Index Medical College, Hospital & Research centre from March 2015 to August 2016. A total of 300 random cases were included in the study and were followed for the evaluation of various parameters like duration of diabetes, Glycated haemoglobin (HbA1c) and skin manifestations. All diabetic patients newly or previously diagnosed of 18 to 70 years of age group without any pre-existing renal disease, gestational diabetes endocrinopathies were enrolled. The Ethical Committee of Index Medical College, Hospital & Research centre, has given approval for the conduct of the study. All the data required for our study was collected systematically through a pre-established pro forma. In the process of data collection, we have approached patients who satisfied our study inclusive criteria and we have explained the details of our study to them clearly in their local language and obtained consent after they understood the study well. All he patients are managed according to the protocol of the institution

laid down for the management of the disease

STATISTICAL METHODS

All statistical analysis was done using the software package SPSS Version 20.0.0. Association between two non-parametric variables was done using Pearson Chi-square test. P value of <0.05 was taken as statistically significant and the data was represented in the form of tables and graphs.

RESULTS

Table 1: Patients with/without skin lesions

Skin lesion	Number	Percentage
Present	181	60.33
Absent	119	39.67
Total	300	100.0

A total of 300 random cases, we have observed that 60.33% of patients have skin lesions and 39.67% of patients don't have skin lesions.

Table 2: Distribution of patients according to age group with skin lesion

Age Group	Number	Percentage
18-50 years	80	44.2
51-80 years	101	55.8
Total	181	100.0

Among all age groups with skin lesions, age groups of 51-80 years were found to be highest and followed by age groups of 18-50 years.

Table 3: Distribution of patients according to gender

Gender	Number	Percentage
Female	78	43.1
Male	103	56.9
Total	181	100.0

There was a male prevalence is more in contrast to the females.

Table 4: Distribution of patients according to skin manifestations

skin manifestations	Number	Percentage
No lesions	119	39.7
Bacterial	56	18.7
Fungal	43	14.3
Pruritus	39	13.0
Viral	15	5.0
Acanthosis	14	4.7
DD	14	4.7
Vitiligo	14	4.7
Skin tag	13	4.3
Yellow nail	12	4.0
Lipodystrophy	11	3.7
psoriasis	8	2.7
Keratosis	6	2.0

Out of 300 patients, 119 (39.7%) didn't have any skin lesions. Among 181 (60.33%) patients with skin lesions, bacterial skin manifestations are found to be highest followed by fungal skin lesions and the patients with keratosis were least observed.

Table 5: Association of viral with HbA1c

HbA1c	Absent	Present	Total
<7.00%	101	7	108
7.00-9.00%	127	4	131
9.00-11.00%	41	4	45
>11.00%	16	0	16
Total	285	15	300

$\chi^2=3.819, df=3, P \text{ value}= 0.282, \text{ Not significant.}$

No statistically significant association was seen between viral and HbA1c grading ($P>0.05$), showing that viral is not dependent on HbA1c

Table 6: Association of Bacterial with HbA1c

HbA1c	Absent	Present	Total
<7.00%	89	19	108
7.00-9.00%	113	18	131
9.00-11.00%	31	14	45
>11.00%	11	5	16
Total	244	56	300

$\chi^2=8.435, df=3, P \text{ value}= 0.038, \text{ Significant.}$

Statistically Significant association was seen between bacterial and HbA1c grading ($P>0.05$), showing that bacterial skin manifestations are dependent on HbA1c.

Table 7: Association of Pruritus with HbA1c

HbA1c	Absent	Present	Total
<7.00%	92	16	108
7.00-9.00%	115	16	131
9.00-11.00%	40	5	45
>11.00%	14	2	16
Total	261	39	300

$\chi^2=0.532, df=3, P \text{ value}= 0.912, \text{ Not significant.}$

Table 8: Association of DD with HbA1c

HbA1c	Absent	Present	Total
<7.00%	105	3	108
7.00-9.00%	126	5	131
9.00-11.00%	39	6	45
>11.00%	16	0	16
Total	286	14	300

$\chi^2=9.459, df=3, P \text{ value}= 0.024, \text{ Significant.}$

Table 9: Association of Skin Tag with HbA1c

HbA1c	Absent	Present	Total
<7.00%	104	4	108
7.00-9.00%	128	3	131
9.00-11.00%	42	3	45
>11.00%	13	3	16
Total	287	13	300

$\chi^2=10.035, df=3, P \text{ value}= 0.018, \text{ Significant.}$

Statistically Significant association was seen between Skin Tag and HbA1c grading ($P>0.05$), showing that skin tag is dependent on HbA1c.

Table 10: Association of Acanthosis with Duration of Diabetes

Duration of Diabetes	Absent	Present	Total
<10 years	127	3	130
>10 years	159	11	170
Total	286	14	300

$\chi^2=2.870, df=1, P \text{ value}= 0.090, \text{ Not Significant.}$

No statistically significant association was seen between Acanthosis and duration of diabetes ($P>0.05$), showing that Acanthosis is not dependent on duration of diabetes.

Table 11: Association of Psoriasis with Duration of Diabetes

Duration of Diabetes	Absent	Present	Total
<10 years	126	4	130
>10 years	166	4	170
Total	292	8	300

$\chi^2=0.149, df=1, P \text{ value}= 0.700, \text{ Not significant.}$

Table 12: Association of Yellow nail with Duration of Diabetes

Duration of Diabetes	Absent	Present	Total
<10 years	123	7	130
>10 years	165	5	170
Total	288	12	300

$\chi^2=1.145, df=1, P \text{ value}= 0.285, \text{ Not significant.}$

Table 13: Association of Keratosis with Duration of Diabetes

Duration of Diabetes	Absent	Present	Total
<10 years	126	4	130
>10 years	168	2	170
Total	294	6	300

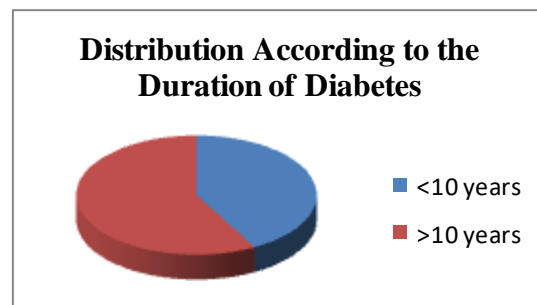
$\chi^2=1.357, df=1, P \text{ value}= 0.244, \text{ Not significant.}$

The above table showing that keratosis is not dependent on duration of diabetes.

Table 14: Distribution of Patients According to Duration of Diabetes

Duration of Diabetes	Number	Percentage
<10 years	76	42.0
>10 years	105	58.0
Total	181	100.0

Majority of the patients (58.0%) in our study had duration of diabetes of more than 10 years is highest in contrast to less than 10 years.



Graph 1: Pie diagram showing distribution according to duration of diabetes

Table 15: Distribution of Patients According to HbA1c grading

HBA1C	Number	Percentage
<7.00%	64	35.4
7.00-9.00%	72	39.8
9.00-11.00%	33	18.2
>11.00%	12	6.6
Total	181	100.0

Out of 181 patients with skin lesions 117 (64.64%) patients were having HbA1c>7. The ration between HbA1cgrading <7.00: HbA1c between 7.00-9.00: HbA1c grading between 9.00-11.00: >11.00 was found to be 35.4: 39.8: 18.2: 6.6

Table 15: Comparison of proportion of skin manifestations according to gender

Skin Manifestations	Female (N=124)		Male (N=176)	
	No.	%	No.	%
Viral	1	0.8	14	8.0
Acanthosis	2	1.6	12	6.8
psoriasis	5	4.0	3	1.7
Yellow nail	3	2.4	9	5.1
Pruritus	23	18.5	16	9.1
Bacterial	20	16.1	36	20.5
DD	6	4.8	8	4.5
Keratosis	2	1.6	4	2.3
Fungal	27	21.8	16	9.1
Skin tag	6	4.8	7	4.0
Vitiligo	5	4.0	9	5.1
Lipodystrophy	6	4.8	5	2.8

In our study, following skin manifestations were seen more commonly in males – viral (8.0%), Acanthosis (6.8%), Yellow nail (5.1%), Bacterial (20.5%), Keratosis (2.3%) and Vitiligo (5.1%) in comparison to females.

Following skin manifestations were seen more commonly in females - psoriasis (4.0%), Pruritus (18.5), DD (4.8%), fungal (21.8%), skin tag (4.8%) and Lipodystrophy (4.8%) in contrast to males.

DISCUSSION

Skin lesions in diabetes mellitus are extremely valuable for the diagnosis of underlying disease process and these are the first expression of disease. The study was conducted on 300 patients with type 2 diabetes attending medicine and endocrinology department for observing skin lesions at Index Medical College and Research Centre, Indore, MP. In our study, out of 300 diabetic patients, 181 patients (60.33%) were found to be presented with

skin lesions. Among 181 patients, age groups of 51-80 years (55.8%) were found to be highest and followed by age groups of 18-50 years (44.2%). The youngest of the patient observed was 22 years and the eldest was 69 years. The mean age of the patients was 49.20 ± 11.79 years. There was a male prevalence (56.9%) is more in contrast to the females (43.1%). In our study, we observed that majority of patients (18.7%) were found to be having bacterial infection and followed by fungal infections. In a similar study conducted by Verma et al in the year 2013 founded 27 patients (18%) with fungal infection out of 240 patients with diabetes in which 210 patients were with type 2 diabetes. Present study also shows similar results as done by Verma. A prompt search should be done in non-pregnant women with diabetes who presents pruritus or recurrent urinary tract infections for fungal infection. Out of total 181 patients, 15 cases (5%) were found to be presented with viral infection. A study conducted by Verma et al (2013) was showed 2% patients with viral infection as a similar finding to our study. Out of 181 patients with skin lesions, 14 patients (4.7%) had acanthosis nigricans. Tissue resistance to insulin is major feature underline to development of acanthosis nigricans. A study done by Khoharo et al (2009) observed that out of 120 type 2 diabetes 5.8% of patients had acanthosis and Pakistan Ahmed et al founded that out of 350 diabetic patients 2.9% patients had acanthosis. All the three studies are in same line with each other. The study shows that about 14 patients (4.7%) were found to have Diabetic dermopathy. In our there is statistically significant association is seen between Diabetic dermopathy and high blood sugar. A study conducted by Gleadeano et al concluded that cutaneous lesions were more frequently observed in diabetic patients were xeroderma, tinea pedis, peripheral hypotrichia, onychomycosis and DD. A similar study done by Chatterjee et al in eastern India with 680 patients was founded a significant

number of patients with Diabetic dermopathy but his study included both type 1 and type 2 diabetes. In the study, about 14 patients (4.7%) were having vitiligo. Verma et al founded 8% of patients were presented with vitiligo. Late onset of vitiligo after the age of 40 years appears to have a close relation with diabetes. Out of total 181 patients with skin lesions, skin tags were seen in 13 patients (4.3%) and 39 patients (13%) were found to have pruritus. In our study we observed that blood sugar plays a major role in the development of skin lesions as it can be seen in 64.64% of patients had HbA1c of more than 7. Majority of the patients (58.0%) in our study had duration of diabetes of more than 10 years is highest in contrast to less than 10 years. It was observed that the duration of diabetes increases the chances for development of dermatological lesion.

A statistically significant association was seen for Bacterial infection ($P < 0.038$), Diabetic dermopathy ($P < 0.024$), and skin tag ($P < 0.018$) in relation to the HbA1c grading. In our study skin manifestations found to be more in males were - viral (8.0%), Acanthosis (6.8%), Yellow nail (5.1%), Bacterial (20.5%), Keratosis (2.3%) and Vitiligo (5.1%) in comparison to females.

CONCLUSION

In this study with sample size of 300 patients, it was observed that 60.33% of patients have skin lesions and 39.67% of patients don't have skin lesions. There was a male preponderance in the present study in contrast to the females. Among all age groups with skin lesions, age groups of 51-80 years were found to be highest and followed by age groups of 18-50 years. In our study we concluded that majority of the patients with skin lesion were not having good glycaemic control as there HbA1c were above normal range. A statistical significance was seen for bacterial infections, diabetic dermopathy and skin tags in relation to high range of HbA1c. Majority of patients with skin lesions were

having duration of diabetes of more than 10 years. Skin manifestations like psoriasis, pruritus, DD, fungal infection, skin tag and Lipodystrophy were more commonly observed in females.

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