

CLINICAL ANALYSIS OF DIABETIC DERMOANGIOPATHY IN A TERTIARY CARE CENTER IN CHHATTISGARH

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ABSTRACT

INTRODUCTION

Diabetic dermopathy is a term used to describe the small, round, brown atrophic skin lesions that occur on the shins of patients with diabetes. The lesions are asymptomatic and occur in up to 55% of patients with diabetes. One hundred diabetic patients and 100 non-diabetic controls were examined for lesions of diabetic dermoangiopathy. Twenty two (22%) diabetic persons have lesions in contrast to only two (2%) people in controls. Diabetic dermopathy was more common in older patients mostly in fifth to the seventh decade and those with longstanding diabetes. There was no statistical significant relationship with the sex, type, severity of diabetes, diabetic neuropathy and macroangiopathy like CAD, PVD or CVA. Dermopathy was also more common (31.5%) among the persons whose duration of diabetes was more than 5 years, than if it was less than 5 years (16.1%). Seven (38.8%) out of 18 cases of retinopathy also had dermopathy. The underlying mechanism for diabetic dermopathy is unknown, although it may be related to local thermal trauma, decreased blood flow causing impaired wound healing or local subcutaneous nerve degeneration. Diabetic dermopathy requires no treatment, but may be a surrogate for other complications of diabetes, which require investigation and management.

KEYWORDS

Diabetic Dermoangiopathy, Dermopathy, Microangiopathy.

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INTRODUCTION: Diabetes mellitus has emerged as a major public health problem in our country and it is the commonest metabolic disorder in India with various manifestations.¹ Better understandings of the disease and improvement in the therapeutic modalities have reduced the life threatening metabolic complications of diabetes. Among the manifestations, the vascular complications are the leading cause of morbidity and mortality. It can affect any organ of the body and thus requires considerable attention. Disease of blood vessels as a consequence of diabetic angiopathy can affect the larger arteries (macroangiopathy) causing Coronary Artery Disease (CAD), Cerebrovascular Accident (CVA) and Peripheral Vascular Disease (PVD), to the smaller capillaries (microangiopathy) causing retinopathy, neuropathy, nephropathy and dermoangiopathy.

Diabetic dermopathy is the commonest skin condition that occurs in patients with diabetes mellitus. The condition was first reported in 1964 by Melin, who described small, circumscribed, brownish atrophic skin lesions occurring on the lower extremities.² The phrase diabetic dermopathy was coined by Binkley in 1965.³ Bauer, et al⁴ described skin

manifestations of diabetic microangiopathy and demonstrated Periodic Acid-Schiff (PAS) positive capillary basement membrane thickening in necrobiosis lipoidica diabetorum. They coined the term "diabetic dermangiopathy".⁴ Similar dermo-microangiopathy findings were also seen by Binkley³ in his study. Kurwa, et al⁵ suggested that bullous diabetorum may also be caused by diabetic microangiopathy.

Diabetic dermopathy has been reported to occur in between 0.2–55% of patients with diabetes.^{2,6,7} Diabetic dermopathy is more common in patients older than 50 years and in those with a longer duration of diabetes.^{6,7} In older patients diabetic dermopathy was found to occur after a shorter duration of diabetes, whereas in younger patients lesions occurred only after ten years in patients less than 20 years of age.²

In this study, the incidence of various skin manifestations of diabetic microangiopathy and its correlation with the type, duration, control and other complications of diabetes as well as with retinal microangiopathy in diabetic patients was undertaken.

MATERIALS AND METHODS: The study was conducted in the outpatient department of General Medicine and Dermatology of a tertiary care institute, between January 2014 and June 2015. One hundred diabetic patients under treatment and same number of non-diabetic controls with age and sex matched were included in this study.

Detailed history including duration and type of diabetes, type of treatment taken and examination, with special

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emphasis on examination of the skin describing the onset, evolution and duration of the skin lesions were elicited and recorded on a proforma. Persons with varicose veins and those with a family history of diabetes were excluded from the controls. Dermatoses in the control group were also recorded.

Relevant systemic examination was carried out. Routine blood, urine, liver and renal function tests, lipid profile and fasting and post-prandial blood glucose and fundus examinations were done in all the diabetics. Other investigations like ECG and sputum for AFB were done in suspected cases to have complications of diabetes. Blood sugar levels were also done in all the controls. To confirm the diagnosis, a skin biopsy was done in a few cases. Dermatological examination was done to look for the lesions of diabetic microangiopathy, especially diabetic dermopathy,⁸ necrobiosis lipoidica diabetorum,⁸ bullous diabetorum,⁵ and Granuloma Annulare (GA),⁹ and also to look for skin infections. In addition, blood sugar levels during the last 2 years were recorded to find out the status of control of diabetes. The criteria for the assessment of the control of diabetes into good, satisfactory and poor and the severity of diabetes into mild, moderate and severe were based on the criteria used by Bellet and Roman.¹⁰ Assessment of the diabetic retinopathy was done by an ophthalmologist by fundus examination. The results were tabulated and analyzed.

RESULTS: There were 55 male and 45 female diabetic patients with an age range of 15-80 years and the mean age of 50.2 ± 14.9 years. Similarly, 100 controls comprised of 54 males and 46 females with an age range of 15-80 years and the mean age of 47.5 ± 18.4 years. The maximum number of patients were in the age group of 51 to 60 years (34%). Hyperpigmented atrophic patches of diabetic dermopathy were seen in 22(22%) diabetic patients [Figure 1] as compared to 2(2%) in controls, a statistically significant difference. No patient had necrobiosis lipoidica diabetorum or bullous diabetorum but 2 patients had granuloma annulare. Of the 22 patients with diabetic dermopathy, 10 were males and 12 were females.

Age in Years	Number of patients		
	With Dermopathy	Without Dermopathy	Total
10-20	0	03	03
21-30	0	08	08
31-40	1	08	09
41-50	7	14	21
51-60	7	27	34
61-70	6	13	19
71-80	1	05	06
Total	22	78	100

Table 1: Age Distribution of Patients with or without Dermopathy

Table 1 gives the age distribution of the patients with and without dermopathy.

The maximum number of patients with dermopathy was of 40 to 70 years of age and the mean age was 55.4 ± 11.9 years. The site of dermopathic lesions was the front of legs in 18 cases, extensor surface of forearms in 7, dorsum of the feet in 2, and the lower part of thighs and neck in one patient each. The number of lesions varied from 1-20. Granuloma Annularae was found in 2 patients in the age group of 51-60 years. Seven (23.3%) of the 30 patients with insulin dependent diabetes mellitus (IDDM) had dermopathy as compared to 15 (21.4%) of 70 patients having non-insulin dependent diabetes mellitus (NIDDM). The difference was not significant. Ten (16.1 %) of 62 patients with the duration of diabetes less than 5 years, 7 (35%) of 20 patients with the duration 5-10 years and 5 (27.7%) of 18 patients with the duration more than 10 years had lesions of dermopathy. Eighteen (23%) of 78 patients with mild, none of the 8 patients with moderately severe, and 4 (28.5%) of 14 patients with severe diabetes had lesions of dermopathy. Fundoscopy revealed that, seven (38.8%) out of 18 cases of retinopathy also had dermopathy, while only 10 (14.2%) out of 72 patients without retinopathy had dermopathy. Table 2 illustrates the association of diabetic dermopathy with the other complications of diabetes.

Complications Of diabetes	Number of patients		
	With dermopathy (22)	Without dermopathy (78)	Total (100)
A. Macroangiopathy			
1. *CAD	3 = 13.6%	7 = 8.9%	10
2. †CVA	1 = 4.5%	0	1
3. ‡PVD	1 = 4.5%	2 = 2.5%	3
4. Hypertension	5 = 22.7%	19 = 24.3%	24
B. Infections			
1. Tuberculosis	1 = 4.5%	5 = 6.4%	6
2. §UTI	2 = 9%	6 = 7.7%	8
3. Skin infections			
• Bacterial	3 = 13.6%	7 = 8.9%	10
• Dermatophytosis	4 = 18.1%	20 = 25.6%	24
• Candidal	5 = 22.7%	15 = 19.2%	20
C. Metabolic			
1. Ketoacidosis	1 = 4.5%	2 = 2.5%	3
2. Hypoglycemia	0	3 = 3.8%	3
3. Hyperlipidemia	2 = 9%	12 = 15.3%	14

Table 2: Diabetic dermopathy and other complications

*CAD= Coronary artery disease, †CVA= Cerebro vascular accident
‡PVD= Peripheral vascular disease, §UTI= Urinary tract infections

DISCUSSION: All our cases of diabetic dermopathy were above the age of 40 years except one case who was 35-year-old, as also reported by others.¹¹ Dermopathic Hyperpigmented atrophic patches were seen in 22 (22%) diabetic patients as compared to 2 (2%) in controls, a statistically significant difference in our study. Front of the legs was the most common (95.4%) site of dermopathy.⁶ Other sites were extensor surface of the forearms (31.8%), dorsum of feet (9%), anterior part of thighs (4%) and nape of neck (5%). Male to female ratio was almost equal in our study. The overall incidence has been reported to be 50%⁶ compared to 22%, in our study. Mean age (\pm SD) of the patients with dermopathy was higher as compared to the

patients without dermopathy, indicating that dermopathy tends to occur in the older age group. Dermopathy was more common (31.5%) if the duration of diabetes was more than five years than if it was less than 5 years (16.1%). Fisher and Danowski¹² had found no correlation between the dermopathy and the duration of the disease, while Danowski, et al⁶ reported increased frequency with increased duration of the disease. Retinopathy was more common (38.8%) in patients with dermopathy as compared to those without it (14.2%). Boyd, et al¹¹ also found more common association between the two. There was no significant correlation between the dermopathy and the macrovascular diseases like CAD, PVD and CVA, though hypertension was more common in both groups. Parving¹² hypothesized that hypertension may accelerate the process of microangiopathy. Skin infections, mostly the superficial fungal and candidal were more common in both groups of diabetic patients. The underlying mechanism behind diabetic dermopathy is unknown, although many theories have been suggested. As the lesions are asymptomatic, patients often do not notice their appearance and may assume they have arisen due to trauma.³ Binkley suggested that the predilection for the shins was due to decreased skin temperature, slow blood flow, increased plasma viscosity and vessel fragility.³ Melin explored the theory that the lesions of diabetic dermopathy occurred secondary to trauma.² Brugler A., et al proposed that the decreased blood flow predisposed patients with diabetes to inadequate wound healing, which led to the formation of the characteristic lesions of diabetic dermopathy.¹³ Another suggested mechanism is that diabetic neuropathy causes subcutaneous nerve degeneration, which leads to diabetic dermopathy.¹⁴ Diabetic dermopathy requires no treatment, but may be a surrogate for more serious complications of diabetes, which require investigation and management.

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