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Research Article
Diabetic

"Clinical Profile and Outcome of Diabetic Foot Ulcer in South Indian Tertiary Care Centre"

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Aim: To study the clinical profile and outcome of diabetic foot ulcer in a Tertiary Care Centre. The clinical profile of 200 patients with diabetic foot ulcer was studied. **Methods:** Patients with diabetic foot ulcer of both genders with age above 18 years willing to participate were included in the study. All patients were subjected to routine diabetic work up with Doppler study and X-ray foot to rule out bone involvement. **Results & discussion**: The majority of patients with diabetic foot ulcers were of age group 51 to 60 years, male predominant, mostly with a duration of diabetes mellitus more than 6 years had intermittent claudication and most population with a single ulcer. **Conclusion:** Our study gives important information that diabetic foot ulcer is more common among middle-aged people with male predominance which gives the importance of screening diabetic patients for neuropathy and peripheral vascular disease.

Keywords: Diabetes, Foot Ulcer, Clinical profile

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Introduction

Diabetes is one of the most prevalent chronic metabolic diseases and in 2010, a study reported about 285 million adults worldwide had diabetes and this figure is projected to rise to 439 million by the year 2030 [1]. Such a profound demographic shift is likely to yield a corresponding increase in the prevalence of diabetes chronic complications, including those in the lower extremity, the diabetic foot [2].

It is estimated that the annual population-based incidence of a diabetic foot ulcer (DFU) ranges from 1.0% to 4.1%. The lifetime incidence may be as high as 25% [3]. Despite the efforts of conservative therapy, there will always be a percentage of ulcers that necessitate hospitalization. These cases may require surgical debridement, resection of distal osseous and soft tissue structure, endovascular intervention, daily dressings, strict glycemic control, and intravenous antibiotic therapy for eradication of infection[4,5].

Foot problems in diabetics can frequently be life or limb-threatening, yet have not received the same level of attention as other diabetes complications [6]. Diabetic foot is the endpoint of neuropathy and PVD; amputation is the endpoint of diabetic foot. In India the reported incidence is2%-29%. [7, 8, 9] Until today, descriptive data regarding demographical and clinical factors in foot ulcers among diabetic patients in rural and are relatively few, though we are all aware of its clinical importance [10]. In this current study, we attempted to record the clinical profile and outcome of diabetic foot ulcer in a set of the mixed population since it takes prominence of disability and economic burden.

Material and methods

Study type: This is a prospective study.

Place of study: The study was conducted in Government Head Quarters Hospital, Tirupur in the Department of Surgery and includes cases of diabetic foot ulcers attending surgical OPD from March 2018 to January 2019.

Sample size: The study was conducted on 200 patients.

Inclusion criteria: Patients of 18 years or older with diabetic history.

Exclusion criteria: Patients on treatment with corticosteroids, immunosuppressive agents, radiation therapy and chemotherapy were excluded. All these patients were subjected to a complete hemogram, fasting and PP blood sugar, LFT, RFT, lipid profile, urine R/E, pus c/s, colour Doppler of lower limb and x-ray foot were done. Collected data was statistically analysed.

Results

The following tables depict results in the study population.

Table 1: Age and Gender Distribution

AGE (In years)	Male	Female	Total
<30	12	04	16
30-40	16	09	25
41-50	34	14	48
51-60	53	39	92
61-70	15	04	19
TOTAL	130	70	200

In our study out of 200 patients, 130 were male and 70 were female. Whose age group ranged between 51-60 years; 92 patients were between 51- 60 age group.<30 years were 16 patients, 30-40 years were 25 patients, 41-50 years were 48 patients and 61-70 years were 19 patients.

Table 2: Duration of Diabetes Mellitus

Duration of Diabetes (In years)	No. of Patients
Newly Diagnosed	06
Up to 5	16
6-8	120
9-15	37
16-20	13
>20	08
Total	200

In our study high incidence of diabetic foot was seen in the patients with a previous history of DM for more than 6 years. The appearance of diabetic foot occurred earlier in the present study.

Table 3: Pain and Intermittent Claudication

Intermittent Claudication	No. of Patients with IC
Present	160
Absent	40
Grade I	26
II	116
III	18

In the present study out of 200 patients, 160 (80%) patients presented with intermittent claudication, pain by 20 (10%) patients.

Table 4: Types of ulcers

SEX	No. of patients	SingleUlcer	MultipleUlcer
MALE	130	123	07
FEMALE	70	68	02
TOTAL	200	191	09

In this study, 191 patients out of 200 presented with a single ulcer and 09 presented with multiple ulcers. All the multiple ulcers patients had 2 ulcers each.

Table 5: Ulcer Location, Number and Sex Distribution

LOCATION OF ULCER/SITE	TOTAL
Toes	126
Malleolus	28
Dorsum Of Foot	18
Heel	10
Metatarsal Joint	14
Lateral Aspect Of Foot	4

Table 6: Blood Sugar Levels

FASTING BLOOD SUGAR LEVEL (mg%)	No. of Patients
<120	17
120-150	61
151-250	116
251-350	6
>350	0
TOTAL	200
POSTPRANDIAL	
<200	70
200-250	108
251-350	20
>350	2
TOTAL	200

Discussion

The present study was done in the Department of Surgery, Government Head Quarters Hospital, Tirupur. Patients were 18 years or older with a diabetic foot ulcer of at least 30 days duration. There was in total 200 patients, whose age group ranged between 51-60; 92 patients were between 51- 60 age group. Reiber GE et al [11] have reported similar findings in their study. They reported that among hospital discharges presenting with diabetic foot ulcers during 1983-1990, the highest percentage were in persons aged 45-64 years.

In our study out of 200 patients, 130 were male and 70 were female. According to Sussman KE [12]males are more affected than females by diabetic foot.

The duration of diabetes as a risk factor has been reported by Keidlig NR, Root HF and Marble A et al [13]. In our study high incidence of diabetic foot was seen in patients with a previous history of DM for more than 6 years. The appearance of diabetic foot occurred earlier in the present study. This could be due to late detection of hyperglycaemia and because Indians in rural population visit hospital when the disease had already progressed. In the present study out of 200 patients, 160 (80%) patients presented with intermittent claudication, pain by 20 (10%) patient.

According to Garcia M, Mc Namara, Gorden J, Kannel WB, et al [14] intermittent claudication is a classical symptom occurring more commonly in diabetic subjects. A study by Rayman G, Hanan A, Tooke JE, et al [15] suggests that postural control of blood flow to the foot is disturbed in patients with diabetic neuropathy. This disturbance leads to the loss of sympathetic vascular tone. This results in hypoperfusion leading to restraining.

In this study, 191 patients out of 200 presented with a single ulcer and 09 presented with multiple ulcers. All the multiple ulcers patients had 2 ulcers each. The incidence of multiple ulcers was 15% in this study, which is similar to the incidence as reported by Reiber GE et al [11]. Edmonds ME [16] has reported that the classical position of a diabetic foot ulcer is under the metatarsal heads, but it is more frequently found on the tips of the toes and occasionally on the dorsum of the toes, between the toes and on the heel.

Heals reported that ulcers on feet are usually circular with punched out edges. The same findings were observed in our study. In this study, 183 patients had inadequate blood sugar control. According to Janke HU, StandlE and MehnertH, et al [17]there is only a slight relationship between good control of sugar and improvement of PVD. Part J [18]in a study of 4400 diabetic patients throughout 25 years stated that glycemic control does not seem to slow the acceleration of atherosclerosis.

In a series of 520 diabetic individuals, Beach KW and Strandness DE, Jr [19]found no correlation between fasting blood sugar levels, glycosylated haemoglobin and atherosclerosis obliterans.

In this study we found no significant difference in the incidence of diabetic foot, ECG changes or intermittent claudication in those patients who had better diabetic control compared to those whose blood sugar levels were less well controlled.

Conclusion

The age group of patients affected with diabetic foot ulcers was predominantly 51–60. Males were affected more than females. Duration of diabetes mellitus was more than 6 years in the majority of patients. Intermittent claudication was found in 80% of patients and rest pain in 10% of patients. A single ulcer was found in 95.5% of patients. Circular ulcers with punched out edges were found more commonly on tips of toes in weight-bearing areas.

Contribution by author

KKS: Data collection, methodology validation, writing manuscript**. MMA:** Data interpretation, literature review, grammatical correction.

What does this study add to existing knowledge?

Uncontrolled Diabetes and duration are the common predisposing factors for foot ulcer.

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