Original research article

Study on clinical profile of patients attending a tertiary care hospital with diabetic foot from Andhra Pradesh

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ABSTRACT:

Introduction: Diabetes is a complex chronic disease that requires regular medical follow-up. Diabetic foot can lead to significant disability adjusted life year (DALYs) and increased economical expenses for the treatment thereby affecting the patients physically, psychologically and economically.

Material & Methods: A hospital based descriptive study was conducted where patients who presented with diabetic foot were included in the study. A total of 50 cases were selected for the study by convenient sampling technique. After obtaining informed consent, patients were interviewed with a pre-designed pre tested questionnaire and then examined.

Results: The mean age of the study population was 53.6±5.4 years with majority (42%) in the age group of 51-70 years age group. Sex wise distribution showed a male preponderance than females. The mean duration of diabetes was 13.8±4.1 years. The most common presenting feature in the present study was non healing ulcer (34%) followed by gangrene (20%), abscess (16%) and others such as cellulitis, osteomyelitis. the most common organism detected was Pseudomonas (16%) followed by Staphylococcus (14%).

Conclusions: The socio demographic variables played an important role in development of foot ulcer. Since neuropathic ulcers are easily preventable, systematic monitoring and proper self care practices such as frequent checking of sugar levels, proper foot hygiene can prevent the development of diabetic foot.

Keywords: diabetes mellitus, complications, diabetic foot, organism, prevention

INTRODUCTION:

According to International Diabetes Federation (IDF), 415 million people have diabetes mellitus in the world and 78 million people in the South East Asian (SEA) Region; by 2040 this will rise to 140 million. There were 69.1 million cases of diabetes in India in 2015 with prevalence among adults being 8.7% [1].

Diabetes is a complex chronic disease that requires regular medical follow-up. Diabetes care involves a change in lifestyle (healthy eating, physical activity, stopping smoking, weight control), self-management of the disease (adherence to the medication, self-monitoring of blood glucose) and the prevention of complications (adherence to foot care and screening for vision and kidney problems) [2,3]. These complications can be divided into macro vascular and micro vascular. With the increased duration of diabetes mellitus, the risk for complications also increases substantially.

The loss of a limb or foot is one of the most feared complications of diabetes and yet foot problems remain the commonest reason for diabetic patients to be hospitalized. Diabetic foot is a foot that exhibits any pathology that results directly from diabetes mellitus or any long-term complication of diabetes mellitus. Diabetic foot ulcers are common and estimated to affect 15% of all diabetic

483

individuals during their lifetime. Diabetic foot ulcers precede almost 85% of amputations [4].

There are two types of diabetic foot: the neuropathic diabetic foot caused by diabetic poly neuropathy, and the neuro ischemic diabetic foot caused by arterial occlusion. These conditions can lead to significant disability adjusted life year (DALYs) and increased economical expenses for the treatment thereby affecting the patients physically, psychologically and economically [5,6].

In this context, the present study has been designed to determine the clinical characteristics of patients with diabetic foot from a tertiary care hospital.

MATERIAL & METHODS:

A hospital based descriptive study was conducted where patients who presented with diabetic foot were included in the study. A total of 50 cases were selected for the study by convenient sampling technique. Patients who did not consent to participate in the study, those who were cognitively impaired and those who had debilitating illnesses were excluded from the study.

After obtaining informed consent, patients were interviewed with a pre-designed pre tested questionnaire and then examined. Questionnaire contained data related to socio-demographic information; questions related to diabetes such as duration, treatment and about the diabetic foot.

Data entry was done by Microsoft Excel 2007 and analysis by EPI INFO version 7. Descriptive statistics were used to describe demographic characteristics of the patients.

RESULTS:

Demographic characteristics:

A total of 50 diabetic foot patients were included in the study and the mean age of the study population was 53.6±5.4 years with majority (42%) in the age group of 51-70 years age group. Sex wise distribution showed a male preponderance than females. Almost three fourth were literates and belonged to lower middle and lower socio economic class.

Table 1: Socio demographic profile of the study population (n=50)

Socio demographic variable	Number	Percentage
Age group (years)		
<30	06	12%
30-50	14	28%
51-70	21	42%
>70	09	18%
Sex		
Male	31	62%
Female	19	38%
Literacy status		
Illiterate	13	26%
Literate	37	74%
Socio economic status		
Upper class	03	6%
Upper middle	10	20%
Lower middle	15	30%
Lower	22	44%

With regards to the duration of diabetes since diagnosed, majority (40%) had duration of about 11-20 years with a mean duration being 13.8±4.1 years. Though one thirds being on insulin and oral hypoglycemic drugs, majority (68%) were not on regular medication. Self care practices among the patients under the study was very poor with about 60% respondents had their last blood sugar testing more than a year ago. Proper care of the extremities especially of the foot and wearing proper foot wear was also not present.

Table 2: Details regarding diabetes mellitus

Variables	Number (Percentage)
1) Duration of diabetes	
< 5 years	05 (10%)
5-10 years	14 (28%)
11-20 years	20 (40%)
>20 years	11 (22%)
2) Type of medication currently using	
Insulin injections	13 (26%)
Oral hypoglycemic drugs	18 (36%)
Both	19 (38%)
3) Whether taking medications regularly	
Yes	16 (32%)
No	34 (68%)
4) When was the last blood sugar testing done	
1-3 months	08 (16%)
4-6 months	12 (24%)
>1 years	30 (60%)

Clinical characteristics:

All 50 patients were examined completely with necessary investigations such as culture to detect organisms if present any, then proper care, dressing and other medications were appropriately given to all patients.

The most common presenting feature in the present study was non healing ulcer (34%) followed by gangrene (20%), abscess (16%) and others such as cellulitis, osteomyelitis. Half of the patients (50%) had the lesion on leg followed by sole (26%), dorsum (18%) and both leg & foot (6%).

More than one third (36%) had an history of injury prior to the onset of the lesion. On culture and isolation of the organisms from the lesions, organisms were detected in about 66% (n=33) of the patients. Among the organisms, the most common organism detected was Pseudomonas (16%) followed by Staphylococcus (14%), Klebsiella (14%), E.coli (10%) and others.

485

Table No 3: Clinical characteristics of the study subjects

Clinical characteristics	Number of patients	Percentage
Presenting features		
Non healing ulcer	17	34%
Fungal infection	02	4%
Abscess	08	16%
Osteomyelitis	01	2%
Cellulitis	05	10%
Gangrene	10	20%
Others	07	14%
Site of lesion		
Sole	13	26%
Dorsum	09	18%
Leg	25	50%
Leg & Foot	03	6%
Organism		
Staphylococcus	07	14%
Streptococcus	01	2%
Pseudomonas	08	16%
Enterococcus	02	4%
Klebsiella	07	14%
E.Coli	05	10%
Others	03	6%
History of Injury		
Yes	18	36%
No	32	64%

DISCUSSION:

Diabetic foot problems are common throughout the world and especially in India as it is being considered to be the diabetic capital of the world, resulting in major medical, social, psychological and economic consequences for the patients, their families, and society as a whole. Foot ulcers are more likely to be of neuropathic origin, and therefore are preventable. People at greatest risk of ulceration can easily be identified by proper careful clinical examination of the feet, education and frequent follow-up.

Present hospital based descriptive study was conducted among 50 patients who presented with diabetic foot with an objective to determine the clinical characteristics of the patients such as site of lesion, presenting feature, organism isolated and other things. In the present study, majority of the diabetic foot patients were males (62%) in the age group of 51-70 years (42%). Similar findings were seen in Jyothylekshmy, et al.(2015)[7] study where

out of the total study population with diabetic foot complications, 200 (72.2%) were males and 77 (27.7%) were females. The age range was between 19 and 87 and the mean age was found to be 61 years.

Almost three fourth belonged to lower middle and lower socio economic class and the mean duration of diabetes is 13.8 years in the present study. These findings were in concurrence with study by Gohel Jayesh B et al (2012)[8] where majority of patients (57%) belongs to lower socioeconomic status. The average duration of diabetes is 9.78 years. Severity of lesion correlated with severity and duration of diabetes.

With regards to presenting feature, present study found non healing ulcer (34%) followed by gangrene (20%), abscess (16%) and others such as cellulitis, osteomyelitis. Gohel Jayesh B et al (2012)[8] found the commonest presenting feature is an abscess followed by gangrene. Jyothylekshmy, et al.(2015)[7] found Peripheral neuropathy (49.45%) and non healing ulcers (41.51%) were the common complications. Other complications include charcot arthropathy, gangrene, cellulitis, fungal infections, callus, osteomyelitis, and necrotizing fasciitis.

In the present study, though one thirds being on insulin and oral hypoglycemic drugs, majority (68%) were not on regular medication. Self care practices among the patients under the study was very poor with about 60% respondents had their last blood sugar testing more than a year ago. Proper care of the extremities especially of the foot and wearing proper foot wear was also not present. Similar findings were observed by Samer I et al (2016)[9] from Iraq on risk factors for occurrence of diabetic foot ulcers which found that the most important factors that made diabetic patients more prone to develop diabetic foot were using a combination of insulin and oral anti diabetic agents,

physical activity, and unavailability of medications in the public sector. The frequency of DF occurrence was well correlated with the absence of a home glucose meter, less frequent blood glucose measurements, and with long duration of diabetes mellitus.

Among the organisms isolated, the most common organism detected in the present study was Pseudomonas (16%) followed by Staphylococcus (14%), Klebsiella (14%), E.coli (10%) and others. In contrast to the study findings, studies by Jyothylekshmy, et al.(2015)[7] and Gohel Jayesh B et al (2012)[8] found the most organism as gram‑positive Staphylococcus species.

In study by Susana P et al (2014)[10] from Portugal observed that most patients were male, with little formal education and a mean age of 66 years. They had been diagnosed with type 2 diabetes for 18 years in average, and diagnosed with diabetic foot ulcer in average 3 years prior to the assessment. About 59% of patients experienced pain in the lower limb that significantly interfered with all areas of their functioning.

CONCLUSIONS:

The socio demographic variables played an important role in development of foot ulcer. Since neuropathic ulcers are easily preventable, systematic monitoring and proper self care practices such as frequent checking of sugar levels, proper foot hygiene can prevent the development of diabetic foot. And the intervention should be planned in a multidisciplinary approach and take into account socio demographic factors. And this can be achieved by effective glycemic control and health education.

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References:

1) International Diabetes Federation (IDF) SEA Region web link: http://www.idf.org/our-network/regions-members/south-east-asia/members/94-india [last accessed on April 24th 2017]

2) American Diabetes Association. Standards of Medical Care in Diabetes 2014. Diabetes Care. 2014; 37(1):1-67.

3) McEwen LN, Ylitalo KR, Herman WH, Wrobel JS. Prevalence and risk factors for diabetes‑related foot complications in Translating Research into Action for Diabetes (TRIAD). J Diabetes Complications 2013;27:588‑92.

4) Vijay Viswanathan, Sharad Pendsey, Arun Bal. Diabetic Foot in India. Available from the following link: http://www.apiindia.org/pdf/medicine_update_2005/chapter_47.pdf [last accessed on April 12th 2017]

5) Young BA, Reiber G, Maynard C, Boyko EJ. Effects of ethnicity and neuropathy on lower-extremity amputation risk among diabetic veterans. Diabetes Care. 2003;26:495–501.

6) Mohammad Zubair, Abida Malik, Jamal Ahmad. Diabetic Foot Ulcer: A Review. American Journal of Internal Medicine.2015; 3(2):28-49.

7) Jyothylekshmy V, Menon AS, Abraham S. Epidemiology of diabetic foot complications in a podiatry clinic of a tertiary hospital in South India. Indian j health sci 2015;8:48-51.

8) Gohel Jayesh B, Sharma Dinesh, Patel Nainesh B, Raswan Uday S, PATIL Salil. A study of socio demographic and clinical profile of cases of diabetic foot. National Journal of Medical Research. 2012;2(3):279-281.

9) Samer I. Mohammed, MS, Ehab M. Mikhael, Fadia T. Ahmed, Haydar F. Al-Tukmagi, and Ali L. Jasim. Risk factors for occurrence and recurrence of diabetic foot ulcers among Iraqi diabetic patients. Diabetic Foot & Ankle 2016,7:29605.

10) Susana Pedras, Rui Carvalho, Maria da Graça Pereira. Socio demographic and clinical characteristics of patients with diabetic foot ulcer. Rev Assoc Med Bra s 2016; 62(2):171-178.