

Original Research Article

An approach to diagnosis and management of diabetic foot in rural medical college

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ABSTRACT

Background: India has the dubious distinction of becoming the diabetic capital of the world within the next few years; with its attendant complications it is going to burden the resources of the country. A majority of diabetic patients develop foot ulcers in one point of time or other during the course of their illness. A significant number of such patients will require long-term hospital treatment and amputations. Objective is to assess the predisposing factor and various modes of clinical presentation and management of Diabetic foot ulcer.

Methods: An observational and prospective Hospital based Study was conducted at AIMS, B G Nagara, Bellur Cross from January 2018 to June 2018. A total of 40 patients with Diabetes Mellitus and suffering from diabetic foot ulcer admitted in the department of surgery were included in the study.

Results: The mean age was 61+ 13.9 years. The male constituted nearly 26 (65%) and 14 (35%) females.

Nearly 31(78%) of the cases had some of the predisposing factors for the diabetic ulcer of the foot The involvement of peripheral Vascular Disease was seen in 6 (16%) of the cases and 9(22%) had. The levels of HbA1C more than 7 mg % was seen in nearly 82 % of the case showing poor glycaemic control.

Conclusions: Diabetic patients have always suffered from complications affecting the lower limbs. Foot infection and the subsequent amputation of a lower extremity are the most common cause of hospitalization among diabetic patients.

Keywords: Diabetics, Diabetic foot, Endocrine, Ulcer, Vascular involvement

INTRODUCTION

The most common endocrine syndrome which affects the multisystem in the human Body. The diabetes affects the vascular, endocrine, neuropathic, Cardiovascular and even the nephrotic system in the human body. The problem of the Diabetic is worldwide, and India is one of the major countries affected by it. The causes of Diabetes in India are multifactorial ranging from the genetic to idiopathic. The food habits, cultural habits and lifestyle of the people in the subcontinent makes them the most susceptible population for the diabetic in the world.¹

82 million people have diabetes in 2013; by 2035 this will rise to 592 million. The number of people with type 2 diabetes is increasing in every country. 80% of people with diabetes live in low- and middle-income countries the greatest number of people with diabetes are between 40 and 59 years of age.²⁻⁴

About 50% of people with diabetes mellitus are unaware of their condition. Approximately 25% of all patients with diabetes undergoing surgery are undiagnosed on admission to hospital. Patients with diabetes have a higher risk of certain diseases (for example, they are 4 times more likely to have cardiovascular disease).⁵

One of the such common example seen among diabetic is Diabetic foot ulcer which affects nearly 12 % of the patients with Diabetic and one of the major causes of morbidity among them.⁶

The major problem faced by the diabetic patients is the diabetic foot complication. A Significant number of patients suffering from diabetic develops Foot ulcer in the due course of time in their life. The development of Diabetic foot ulcer is seen in both type of patients who are on regular treatment and irregular treatment but the outcome of it is bad in the former. The cause of diabetic foot ulcer is multifactorial, due to involvement of vascular system, Neuropathies, poor control of Diabetic and infection of the ulcer by the bacteria.

The diabetic foot can be divided into the neuropathic foot in which the neuropathy predominates and the ischemic foot where occlusive vascular disease is the main factor. There is increase in incidence of diabetes and its complications mainly foot ulcers, skin and soft tissue infections, surgical site infections, peripheral vascular disease leading to amputation, Charcot neuroarthropathy, ankle ulceration with osteomyelitis and fracture of ankle bone etc. in rural population as compared to earlier in urban population.⁷

Treatment includes thorough wound management, good microbiological control using appropriate antibiotics and strict glycemic control. Many recent approaches like vacuum dressing, platelet derived growth factors, larval therapy have revolutionized the management of diabetic foot. Hence the present study has been undertaken to evaluate the predisposing factors, modes of presentation and management protocols in diabetic foot.

Hence the need for study is to advice the patients in rural population regarding the early detection by explaining the symptoms and to educate them for regular checkups and change in lifestyle for good control of diabetes, so that the complications which lead to poor prognosis and loss of parts etc. can be avoided.^{7,8}

Objective

To assess the predisposing factor and various modes of clinical presentation and management of Diabetic foot ulcer.

METHODS

An observational and prospective Hospital based Study was conducted at AIMS, B G Nagara, Bellur Cross from January 2018 to June 2018. A total of 40 patients with Diabetes Mellitus and suffering from diabetic foot ulcer admitted in the department of surgery were included in the study.

All the patients with Diabetes mellitus having foot infections and ulcerations admitted in the surgical ward

and also referred from the other specialty departments. The data regarding patient particulars, detailed clinical history, clinical examination, diagnosis, investigations, surgical procedures are collected in a specially designed case recording format.

Inclusion criteria

All the patients with Diabetes Mellitus presenting with foot ulcer with or without infection.

Exclusion criteria

- Patient with Foot ulcers without Diabetic.
- All the patients who were included in the study were subjected to the strict glycemic control with insulin and usage of systemic antibiotics along with surgical debridement. The ulcers were subjected for moist wound environment and ovum dressing. All the patients were given education regarding foot care.

RESULTS

A total of 40 patients were analyzed. The age of the patients ranged from 42 to 76 years in our study. The mean age was 61+13.9 years. The male constituted nearly 26 (65%) and 14 (35%) females.

Table 1: Clinical presentation of the study subjects.

Clinical Presentation	No. of Cases	%	
Mode of Presentation	Cellulitis	19	48
	Ulcer	15	35
	Abscess	5	15
	Gangrene	1	2
Predisposing Factor	Present	31	78
	Absent	9	22
Site of Lesion	Dorsum	11	28
	Toes	12	31
	Sole	17	41
Duration of Diabetes	Newly detected	8	20
	< 5 years	2	5
	5-10 years	15	38
	More than 10 yrs	15	38
System Involved	PVD	6	16
	Neuropathy	9	22
	Both	16	39
	Osteomyelitis	9	23

The Cellulitis (48%) was the most common modes of presentation of the diabetic foot ulcer in our study followed by 14(35%) with ulcer presentation and abscess seen in 5 (15%) of the cases. only 1 (2%) of the cases presented with gangrene.

Nearly 31(78%) of the cases had some of the predisposing factors for the diabetic ulcer of the foot. The most common site of Diabetic foot ulcer is the sole 17

(41%) followed by toes 12 (31%) and dorsum of foot in 11 (28%). The duration of diabetic was more than 5 years in majority of the cases 30 (76%) and nearly 8 (20%) of them had diabetic diagnosed at the time of admission to hospital with ulcer in the foot.

Table 2: Treatment Modalities used among the study subjects.

Treatment	No. of cases	%
Slough excision, regular dressing and SSG	23	58
I and D fasciotomy	9	22
Tarsal tunnel release	6	16
Disarticulation	1	2
Below knee amputation	1	2

The involvement of peripheral Vascular Disease was seen in 6 (16%) of the cases and 9(22%) had neuropathy associated with them. 16(39%) of them presented with both the vascular and nervous system involved. Osteomyelitis was seen in 9(23%) of the cases on our study.

The various treatment modalities employed in our study. Slough Excision with regular dressing was done in 23 (58%) of the cases, I and D Fasciotomy was done in 9 (22%) followed by 6 (16%) of the people. Disarticulation and Below Knee amputation was done on each one of the cases. The levels of HbA1C more than 7 mg % was seen in nearly 82% of the case showing poor glycemic control.

DISCUSSION

The most common age group involved in our study was in the late 40's with average age of the study population was 61 years. The findings of our study with the age was similar to the study findings of JOS University 9 study where the mean was 63.2 years and in Seattle series 10 it was 64.7 years.

The male predominance of the disease was seen in our study which was also seen in the other studies done by JOS University 9 and study done by Diabetic Research Centre, Chennai was also comparable to our study findings.¹¹

The site of lesion of Diabetic foot ulcer in our study which said the sole of the foot is the major region affected by foot ulcer in diabetic patients followed by dorsum and toes of the foot.

The study area being the rural and walking bare foot by the people in the field areas by the farmers was the reason. But in the study done by Apelquist et al and Reiber et al series where toes of the foot were the most common site of lesion.^{12,13}

The duration of diabetic is an important factor for the occurrence of diabetic foot ulcer. any complication caused by diabetes is always related to the duration of diabetics. In the study done by James S, Seattle series 10 study also showed that more the duration of diabetes more the complication of diabetic foot ulcer. The diabetic foot complications occurred early in our study most probably due to lack of strict glycemic control.¹⁴

The commonest vascular system involved will be tibial arteries leading to the atherosclerosis and decreased blood flow which will result in decreased delivery of blood flow and oxygen delivery and even the antibiotics reach will be less which will hamper the chances of the healing. These complications were also seen in our study which was comparable to the study of Apelquist et al, and JOS University 9.¹²

The surgical treatment modalities followed in our study was similar to the study findings of various articles where similar surgical modalities were also followed by various studies.⁹⁻¹¹

Patient education in foot care, prophylactic skin and nail care, and footwear reduces the risk for foot ulcers and lower extremity amputation by 25% in those patients with no specific risk factor.¹⁴

CONCLUSION

Diabetic patients have always suffered from complications affecting the lower limbs. Foot infection and the subsequent amputation of a lower extremity are the most common cause of hospitalization among diabetic patients. The hallmark of diabetic foot problem in our populations is gross infection, and major contributing factors for late presentation include bare foot gait, attempts at home surgery, trust in faith healers and undetected diabetes. Education regarding foot care plays a vital role in the prevention of recurrence.

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