ORIGINAL ARTICLE

Diabetic Foot - Assessment and Management of 100 Cases

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ABSTRACT

Aim: To assess and manage the diabetic foot disease according to Wagner's Classification. This will help us to outline important principles of management of diabetic foot and identify measures to decrease morbidity and mortality.

Method: The study was conducted in Surgical Unit I of Nawaz Sharif Social Security Teaching Hospital, Lahore from Jan 2009 to March 2010. 100 patients with diabetic foot disease were included in the study. They were classified according to Wagner's Classification. The study recorded age group, type of D.M, previous history of amputation, severity of disease and method of treatment viz conservative or surgical.

Results: There were 56 males and 44 females. The age incidence ranged from 20 yrs to 75 yrs, the commonest age group being over 60 yrs. 15 patients had Grade I, 27 patients Grade II, 18 patients Grade III, 30 patients Grade IV and 10 patients Grade V lesions. 2 patients had Type I D.M and 98 patients Type II D.M. There was family H/O of D.M in 11 patients and 7 patients had undergone amputation in the past. 19 patients were managed with rest and antibiotics alone. 31 patients needed incision and drainage of abscess and debridement while 50 patients underwent amputation of toe or limb. There was a mortality of 5%. Peripheral neuropathy was the commonest risk factor (47%).

Conclusion: Foot complication in diabetic patient is a disabling morbidity that often is the first step towards lower extremity amputation. Recognition of risk factor, patient education in foot care, early hospitalization and aggressive/appropriate medical/ surgical treatment can improve morbidity/ mortality.

Keywords: Diabetes Mellitus, Diabetic foot, Wagner's Classification.

INTRODUCTION

Diabetes foot ulceration may affect approximately 15% of patients with D.M and is the most common precursor of lower limb amputation[1-3]. Common risk factors for amputation following ulceration include the presence of peripheral vascular disease, peripheral neuropathy, structural foot deformity and associated infection[4].

The incidence of lower extremity amputation is 25.8/1000/yr in diabetic patients compared to 1.1/1000/yr in non-diabetic patients[5]. In Pakistan, the amputation rate varies from 21%[6] to 48%[7] due to lack of diabetic education, unhygienic conditions, poor social status and late referral to tertiary care centre.

Table-I: Wagner's Classification for Diabetic foot disease (Adopted from Levin and O'Neals)[8]

Grade O	High risk foot and no ulceration
Grade I	Superficial ulcer
Grade II	Deep ulcer (Cellulitis)
Grade III	Osteomylitis with Ulceration or abscess
Grade IV	Gangrenous patches, partial foot gangrene
Grade V	Gangrene of entire foot

Foot disorders such as ulceration, infection and gangrene are the leading cause of hospitalization in patients with D.M. The ulcers are usually precipitated by a trivial injury such as pin prick, friction by tight shoes or scratching. The sensory impairment is a single most important factor leading to the formation of neuropathic ulcer and the arterial disease is often a contributing factor. Poor glycemic control leads to infection. This study was conducted to assess and manage the diabetic foot disease according to Wagner's Classification[8].

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MATERIAL AND METHODS

This study was conducted at Surgical Unit I of Nawaz Sharif Social Security Teaching Hospital, Lahore which is the tertiary unit of PESSI. The study was conducted from Jan 2009 to March 2010 on 100 patients with diabetic foot disease.

The data included age, sex, type of D.M, family H/O of D.M, Previous H/O amputation, Wagner's Classification of foot disease. Investigations including Blood sugar, renal function test, Swabs from the ulcer and X-Ray of the foot were recorded. The diabetic foot diseases were classified using Wagner's Classification. Both medical and surgical methods of treatment were used. The data was compiled and frequencies were calculated.

RESULTS

Table-2: Socio-demographic characteristics of patients (n=100)

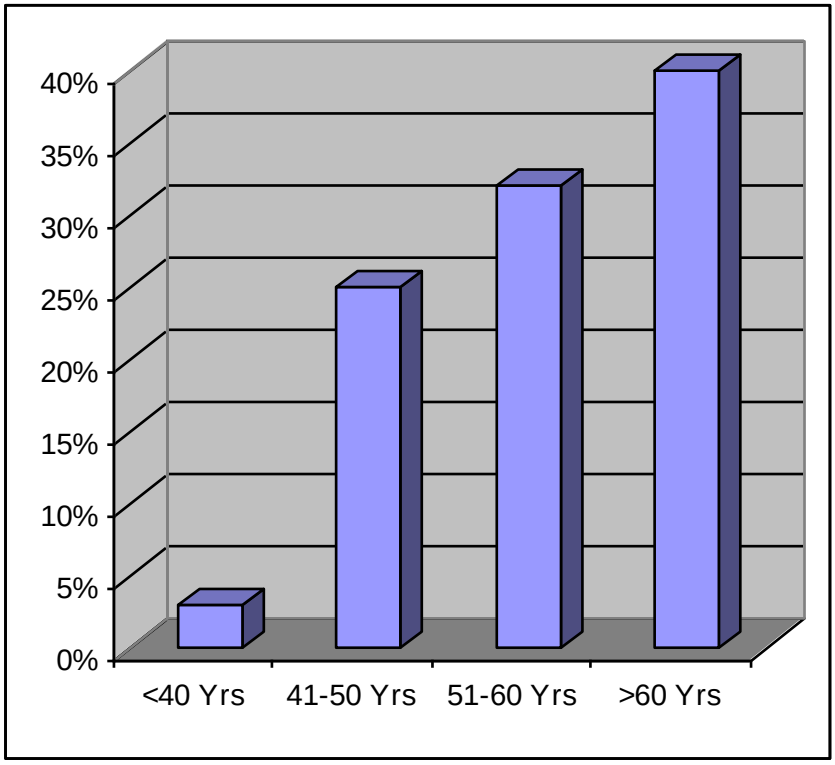
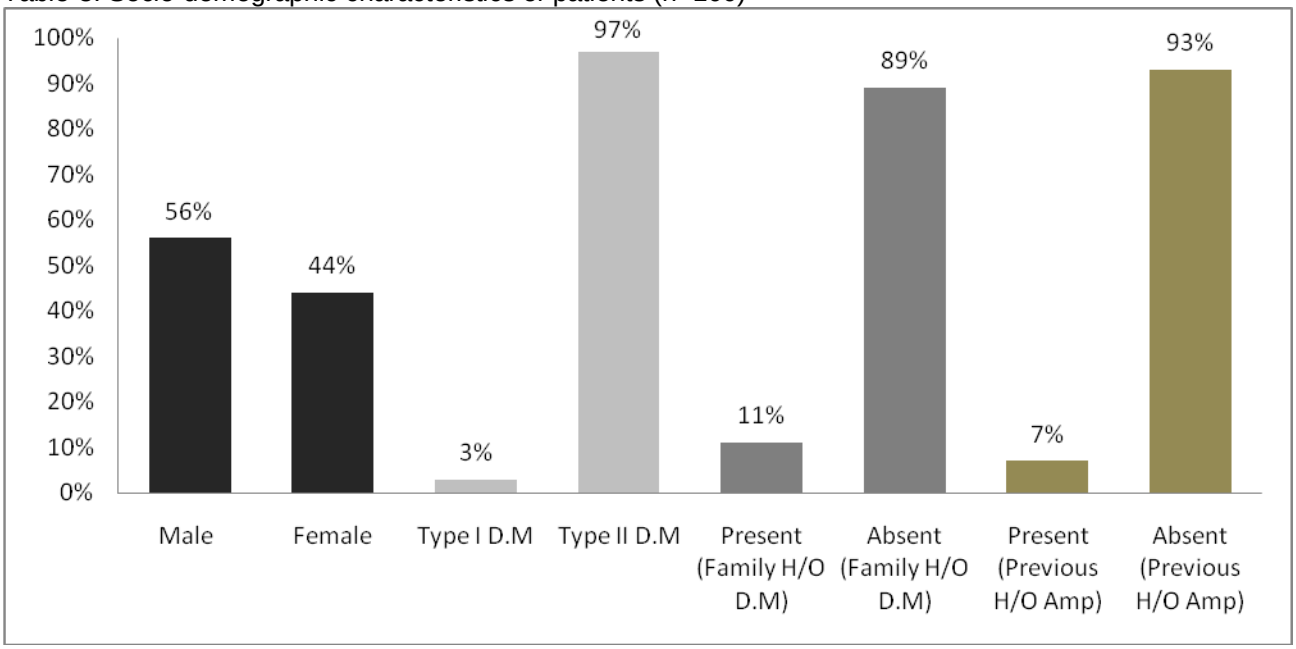


Table-3: Socio-demographic characteristics of patients (n=100)



The Socio-demographic characteristics of the study as shown in Table 2 and 3 reveals that majority of patients were over 60 years of age. Males dominated the study with 56% as compared to 44% females. Majority of the patients had Type II Diabetes with only 3 patients having Juvenile Diabetes. A family history of Diabetes Mellitus was present in 11% of the study group. There was a history of previous amputation in 7% of our cases

Table-4: Number of patients according to Wagner's Classification (n=100)

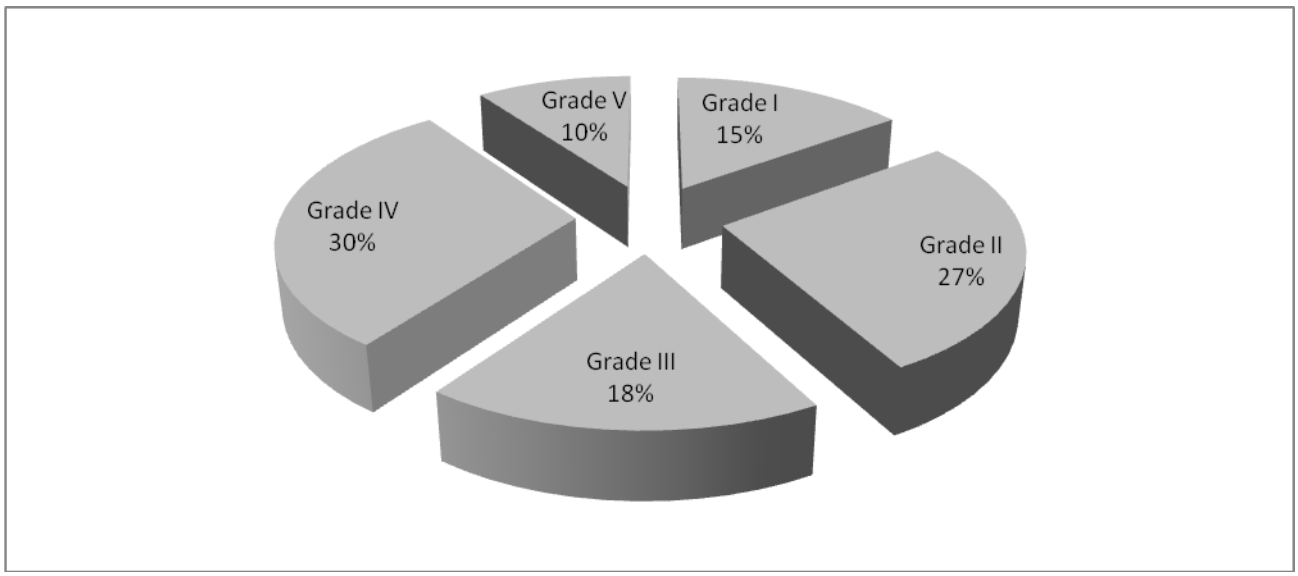


Table-5: Treatment Provided

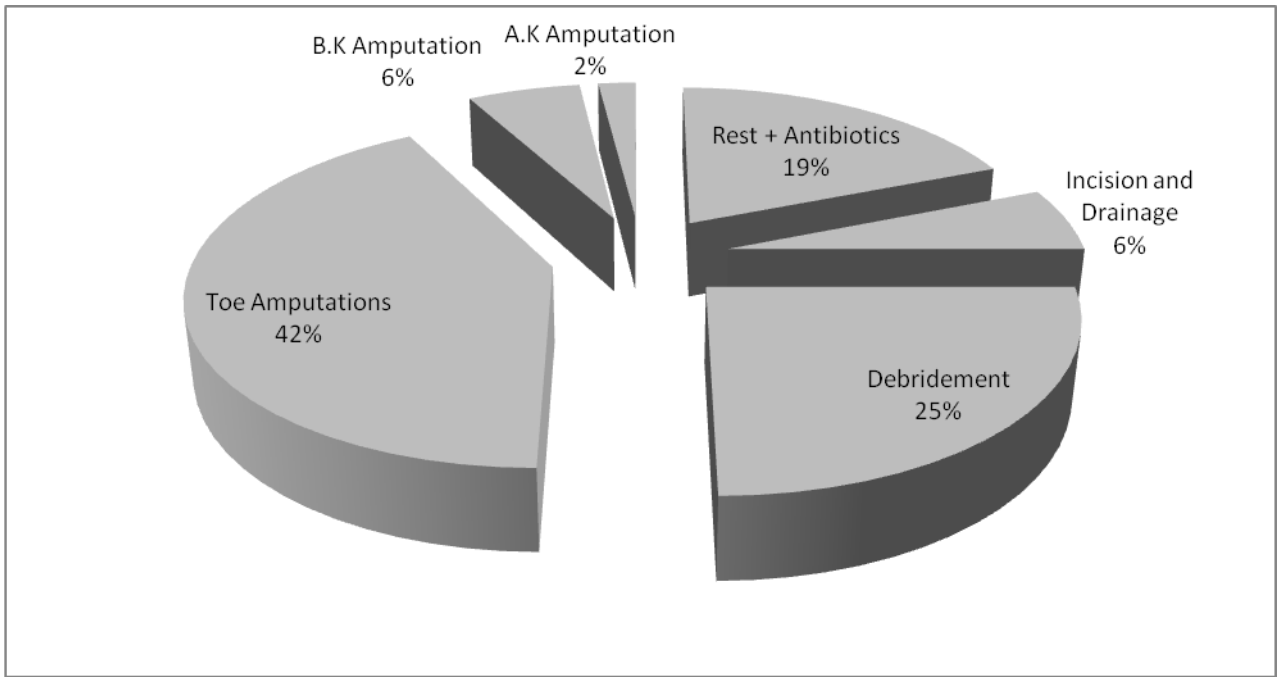


Table-6: Causes of Mortality (n=5)

Causes	No. of patients
Septicemia	2
Myocardial Infarction	2
Renal Failure	1

Table 4 and 5 show the number of patients according to Wagner's Classification and the treatment provided. The graph reveals that the majority of patients presented with advanced diseases at 27% in Grade II, 18% in Grade III and 30% in Grade IV. 50% of the patients were treated with antibiotics, I & D and debridement while amputation of some sort was done in 50%, the main bulk being toe amputations. Table 6 shows that the mortality in our study was 5, 2 of which died due to Septicemia, 2 due to MI and 1 with renal failure.

DISCUSSION

Diabetic foot ulceration is the most frequent cause of hospitalization among diabetic patients. Lower extremity amputation is the most feared and costly consequence of foot ulceration[1,9].

The majority of the patients presented to us with advanced stage and grade of ulceration reflecting a lack of structure in the health care delivery system of Pakistan between primary, secondary and tertiary care units. Attempted home surgery, trust in faith healers and undetected diabetes further aggravates the problem. Moreover inadequate antibiotic treatment and use of non-sterile instruments for dressing result in the growth of multi resistant organism necessitating hospital admission and surgical intervention[10].

In our study, only 15 patients presented in Grade I, while there were 27 patients in Grade II (deep ulcers), 18 patients in Grade III (osteomyelitis), 30 patients in Grade IV (gangrene patches in pressure areas) and 10 patients in Grade V (gangrene of entire foot). The patients present with advanced disease to a surgeon and for this reason, patients with Grade I are less and those with Grade II, III, IV and V are more in our study. In another local study, the common presentation was patients with ulcer 21%, abscess 31% and gangrene in 12.5%[11].

In our study, 19% patients responded to conservative treatment with antibiotics, 31% had debridement while 50% patients needed amputation which is comparable to another local study where 17% were treated by antibiotics, 33% patients had debridement and 48% of patients needed amputation[7].

In our study, 7% had a previous history of amputation. This is less than an international study where ipsilateral re-amputation was done in 8-22% of survivors and 26-44% needed a contralateral amputation within 4 years[14].

In a cohort of 558 people, only 345 (62%) diabetic ulcer healed after primary treatment; 123 (22%) healed after surgery and 90 (16%) died unhealed[15]. In deep infection, the rate of healing without surgery can drop to 40%[16].

Rates and speed of healing are best in ulcers that are mainly a result of neuropathy. In trials of off-loading techniques, 21-50% of patients healed within 30 days[17], and 58-90% within 12 weeks[18]. Piaggesi and colleagues[19] reported 79% healing at 25 weeks in neuropathic ulcers after conventional treatment, compared with 96% after excision of the ulcer and adjacent bone[19]. However, despite good management, healing rate in large multi-centre trials were 24% at 12 weeks and 31% at 20 weeks[20].

We had 5 mortalities in our study. These patients presented to us in Grade V. Two patients died of Septicemia, two passed away with MI while one death was due to renal failure.

There is a need of Diabetic foot clinic in every hospital to reduce the rate of diabetic foot disease. It should be run by a consultant diabetologist, associate diabetologist trained especially in the diabetic foot, a trained nurse, chiropodist and orthotist. Patients' education in foot care, prophylactic skin and nail care and protective foot wear reduces the risk of foot ulcer and lower extremity amputation.

CONCLUSION:

Earlier presentation with aggressive and appropriate medical and surgical treatment according to the severity of ulceration can reduce morbidity and mortality[8]. This can be achieved by educating patients and health care professionals[6,12] and instituting comprehensive multi-disciplinary foot care programs[1,6,13].

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