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Evaluation And Management Of Diabetic Foot According To Wagner's Classification.

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ABSTRACT

Diabetes is one of the most common co-morbid illnesses in our community. One of its complications in the long course is diabetic foot. Morbidity and mortality due to this complication is major health issue. This study is aimed to evaluate and manage the different lesions of the diabetic foot according to Wagner's classification. To describe the different grades of diabetic foot we treat. To study and compare outcomes and identify measures to decrease morbidity and mortality due to diabetic foot disease. The study was conducted between August 2019 and October 2019, 50 patients with diabetic foot who got admitted to the Department OF General Surgery, at IGMCRI Pondicherry were subjected to surgical treatment depending upon Wagner's classification. Data was collected and analyzed. The majority of the patients presented with higher grades and with poor glycemic control at the time of presentation. Conservative management with antibiotics was useful in a small subset of the patients. The majority of the patients needed surgical treatment in the form of debridement to amputations. Patient education and strict glycemic control can reduce the burden of diabetic foot. Early diagnosis and hospitalization, appropriate treatment including medical and surgical treatment according to the grade can reduce morbidity mortality and improve the outcome of the disease.

Keywords: Antibiotics, Amputation, Wagner classification, Complications, Glycemic control

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INTRODUCTION

Four categories of diabetes are recognized. Type 1, formerly insulin-dependent diabetes mellitus (IDDM), is an autoimmune disease affecting the pancreas. Individuals with type 1 diabetes are prone to ketosis and unable to produce endogenous insulin [1]. Type 2, formerly non-insulin-dependent diabetes mellitus (NIDDM), accounts for 90% to 95% of cases diagnosed. Type 2 diabetes is characterized by hyperglycemia in the presence of hyperinsulinemia due to peripheral insulin resistance. Gestational as well as genetic defects and endocrinopathies are recognized as other types of diabetes [2]. Diabetes is associated with numerous complications related to microvascular, macrovascular, and metabolic etiologies. These include cerebrovascular, cardiovascular, and peripheral arterial disease, Retinopathy, Neuropathy, Nephropathy. Currently, cardiovascular complications are the most common cause of premature death. Diabetes continues to be one of the most common underlying causes of non-traumatic lower extremity amputations (LEAs) [3]. Mean age at diagnosis of the diabetic foot and mean age at major amputation was significantly lower as compared to Western literature [4]. This should be the sole reason to explain favorable results seen in the Indian series especially about survival at 2 years after major amputation, contralateral limb amputation rate, above the knee to below-knee amputation rate [5]. Older patients reported in Western literature are more likely to have advanced atherosclerotic disease involving heart, cerebral circulation, peripheral circulation, and renal circulation thus adversely affecting mortality and contralateral limb amputation rate. 50% of patients with diabetic foot ulcers suffer from Peripheral artery disease (PAD) which is occasionally caused by atherosclerosis, PAD is a risk factor in wound healing and lower limb amputations [6]. Loss of protective sensation (LOPS), peripheral artery disease (PAD) and foot deformity combined with a history of foot ulceration and any level of lower extremity amputation is major risk factors for DFU. Patients without any of these risk factors do not appear to be at risk for ulceration [7].

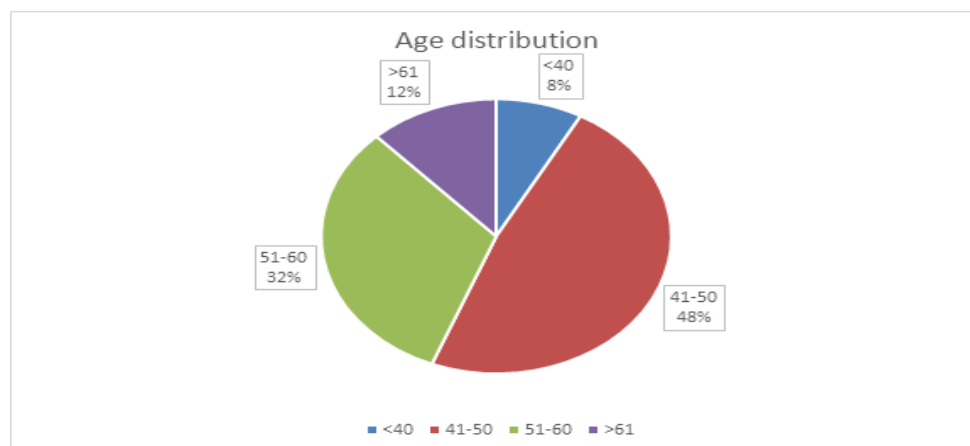
The majority of Indian patients have an infection as a dominant feature in the non-neuroischemic foot. In such cases, local debridement, control of infection and diabetes, certainly improve limb salvage. If the infection is fulminant, minor, or at the most below-knee amputation is enough to stop the advancing infective process [8]. As against this in Western patients, where old age and Neuro ischemic limbs are common, advanced atherosclerosis, and multi-system involvement makes above-knee amputation perhaps the right choice to reduce the overall mortality [9,10].

METHODS

The study was conducted between August 2019 and October 2019, 50 patients with diabetic foot who got admitted to the Department of General Surgery, at IGMCRI Pondicherry were subjected to surgical treatment depending upon Wagner's classification. Patients with Chronic Diabetic Foot and previous amputations were also included in the study. Patients were recruited from the surgical OPD and admitted. Data were collected by detailed history, clinical examination, wound or ulcer and were recorded in the pre-designed proforma. Age, sex, socioeconomic status, duration and type of diabetes, Wagner's classification, examination findings, blood investigations, renal function test, a swab of the wound. X-ray and treatment provided were collected. Treatment was carried out in both medical and surgical means.

RESULTS

Graph 1: Sociodemographic Characteristics Of The Patients



Graph 2: Distribution According To Wagner's Classification

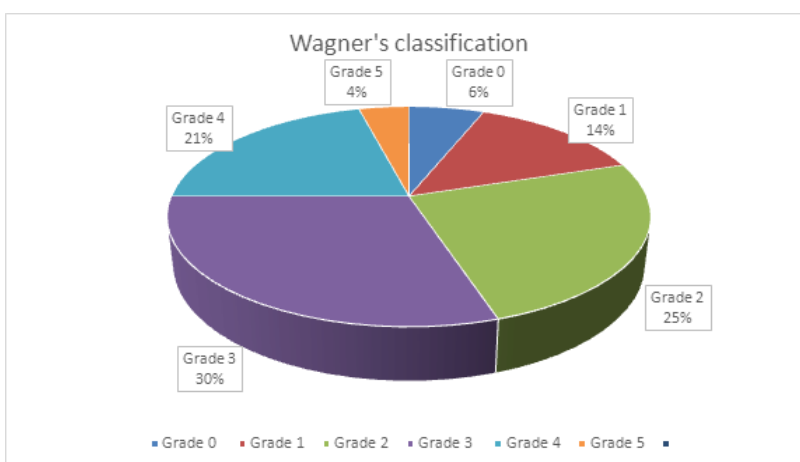


Table 1: treatment Provided

Type of Treatment	No. of Patients	%
Antibiotics alone	8	16
Incision and drainage	2	4
Debridement	14	28
Amputation	25	50
Skin Graft for chronic ulcer	1	2

Table 2: Type Of Amputation

Type of amputation	No. of patient
Ray's/ toe	19
Transmetatarsal	4
Below knee	2

Table 3: Cause Of Mortality In Diabetic Foot Disease (N=3)

Cause	Number of patients
Septicaemia	2
Ketoacidosis	1
Chronic renal failure	1

Table 4: Culture Report

Investigations	No. of patients	%
Culture		
<i>Staph. aureus</i> Isolated	13	26
Mixed	25	50

Table 3, 4, 5 From the above-observed data, most of the patients presented with the advanced grade, grade 2 – 24%, grade 3 - 30%, grade 4 – 22%. Henceforth surgical management was required in most of the patients. Amputation in half of the Patients and debridement in 28% of patients highlighting the advanced disease at presentation. Wagner's classification may be different for a surgeon as compared to the physician because patients come to a surgeon with advanced disease hence the greater grade of patients were in our study in more percentage.

DISCUSSION

Diabetes is associated with complications in the long run. Diabetes affects blood vessels throughout the body, both the large blood vessels and small blood vessels. When the vessels that supply

blood to the nerves in the legs get affected this can result in burning pain or numbness in the feet (peripheral neuropathy) resulting in reduced pain sensation hence an injury might go unnoticed [11]. It can also result in poor circulation (peripheral artery disease) which may slow the healing process of an ulcer Foot infection and subsequent amputation of a lower extremity are some of the most common reasons for hospitalization. It is important to recognize PAD as soon as possible, as it is correlated with risks of nonhealing ulcers, infection, major limb amputation cardiovascular morbidity, and overall mortality [12].

PAD mostly remains largely undiagnosed until the patient presents with serious tissue loss, as many patients typically lack the classic preceding clinical symptoms of PAD such as claudication or rest pain. Diabetic foot ulcers may result from calluses, blisters, cuts, burns, and ingrown toenails, patients might not be conscious of these minor injuries due to peripheral neuropathy, hence before they are detected ulcers may have developed and enlarged keeping in mind that high blood glucose levels often slows healing [13]. Regular foot inspection is an important part of diabetes management and can help prevent foot ulcers observed in our study, it is more common in males. The more common age group is between 40-60 in our study [14]. The hallmark of diabetic foot is its gross infection and major contributing factors for late presentation are poor knowledge about the disease, undetected diabetes, trust in faith healers, barefoot gait [15]. Peripheral neuropathy and infection are common risk factors for the diabetic foot. In our study mixed infection, including aerobes, anaerobes, is common [16]. There were 4 mortalities in our study, all had a high Wagner score. of these 2 was due to septicemia, 1 due to ketoacidosis, 1 due to chronic renal failure [17,18]. Prevention strategy including patient education in foot care, prophylactic skin, nail care, and footwear reduces the risk of foot ulceration and amputation rates [19,20].

CONCLUSION

Diabetic foot and its complications are troublesome, source consuming, and producing disability, morbidity, and mortality. Grading of the diabetic foot lesions according to Wagner's classification helps in choosing an appropriate treatment for the grade. Patient education and strict glycemic control can reduce the burden of diabetic foot. Early diagnosis and hospitalization, appropriate treatment including medical and surgical treatment according to the grade can reduce morbidity mortality and improve the outcome of the disease

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