



A PROSPECTIVE STUDY TO EVALUATE THE PREDOMINANT CAUSE OF DIABETIC FOOT ULCERS

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ABSTRACT

In recent years, diabetes mellitus (DM) has become a fast-growing public health problem that affects both developed and developing countries. The International Diabetes Federation reports that about 415 million people globally (1) had DM in 2015 and it is projected to affect 642 million by 2040.

Diabetic foot ulcer (DFU) is a common and major complication of diabetes, representing a major healthcare burden with significant morbidity. It is defined as the presence of infection, ulceration or destruction of deep tissues associated with neurological abnormalities and various degrees of peripheral arterial disease (PAD) in the lower limb in patients with diabetes. This study evaluates three main causative factors of diabetic foot ulcers, namely Neuropathy, Angiopathy and Infection to determine the most common cause.

KEYWORDS : Diabetic foot ulcer, Peripheral neuropathy, Foot care in Diabetes, Awareness programs for diabetic foot ulcer.

INTRODUCTION

Diabetic foot ulcers occur as a result of multiple factors, such as mechanical changes in conformation of the bony architecture of the foot, peripheral neuropathy and atherosclerotic peripheral vascular disease, all of which occur more frequently in patients with diabetes.⁽⁴⁾

The reasons for diabetic foot are:

- 1) Foot is the most vulnerable part of the body for injury and infection neglected by patient.
- 2) The site of preference for neuropathy and ischemia is also the foot. Diabetes is one of the major problems of this generation with world wide dimension. According to Modi et al., overall incidence of diabetics in India is 1.2%.² The complications are more prevalent among the people of lower economic due to negligence, illiteracy and poverty.

Among the many chronic complications of ⁽³⁾ diabetes, diabetic foot has remained the most feared complication, with both patients and treating health care professionals sharing the dread in equal measure. In fact proper foot care and appropriate footwear can prevent occurrence of foot ulcerations.

Looking at the patient's feet and picking up foot lesions when they are young is the key to success.

Diabetic foot is a significant economic problem in countries like India, where a majority of people are not covered by medical insurance the entire cost has to be borne by the patient who is often the bread winner of the family.

AIMS & OBJECTIVES

- 1) To evaluate cause of diabetic foot ulcers using Arterial-Venous Doppler, pus culture and sensitivity and Nerve conduction study.
- 2) To aid in the rehabilitation of patients with diabetic foot ulcer.

MATERIALS & METHODS

The hospital based observational study was carried out in Department of General Surgery at tertiary care hospital by collecting data of 90 cases of patients with diabetic foot ulcer. This was done after relevant institutional ethics committee

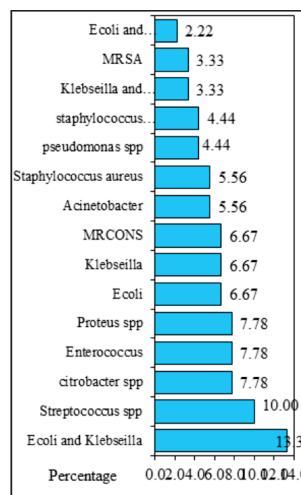
approval in November 2019.

The study included all patients admitted in surgery ward at a tertiary care hospital with diabetic foot ulcer who were graded according to the Megitt- Wagner classification, grades 1-3. All patients with grade 4 and 5 ulcers and amputees were excluded. Data was collected from these patients after taking their consent on the Ethical Committee approved Informed Consent forms. The evaluation of the diabetic foot ulcer was done based on three parameters i.e. Angiopathy, Neuropathy and Infection by the following non invasive modalities, Arterio-venous Doppler; Nerve conduction study and Pus(culture and sensitivity).

OBSERVATIONS & RESULTS

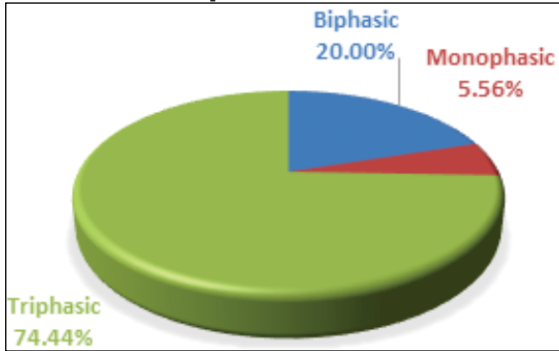
An analysis of 90 cases of Diabetic foot ulcer was done. These cases were admitted and treated in different surgical units at a Tertiary care center, Pune during the period of September 2019 to September 2021.

The most commonly isolated organisms on culture were Ecoli and klebseilla(7.78%), Proteus spp(7.78%), Enterococcus spp (7.78%) and Citrobacter spp(7.78%). 63 patients(70%) had infection, while 27 patients (30%) had no organism.



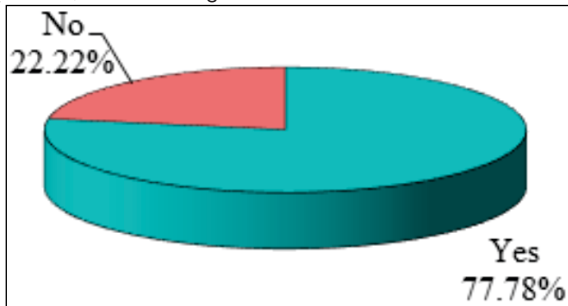
Graph 1:- Culture report wise distribution of patients

Doppler findings among patients show Triphasic 67 patients (normal) (74.44%); Biphasic 18 patients (20%); Monophasic 5 patients (5.56%) wave pattern on Doppler. Angiopathy was observed in 25.56% (23 patients).



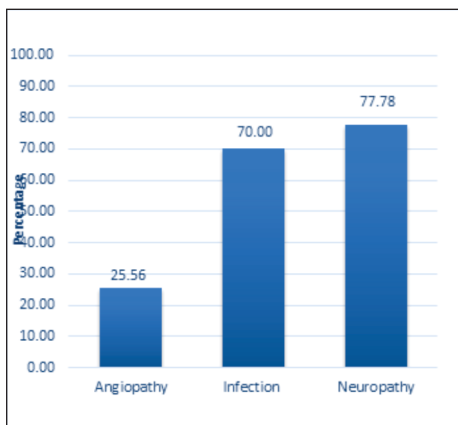
Graph No 2:-Lower limb Arterio-venous Doppler findings wise distribution of patients.

Changes on NCV were seen in 77.78% (70 patients) [majority of patients had sensory neuropathy] and 22.22% (20 patients) had no findings on NCV.



Graph No 3:- Nerve Conduction Study findings wise distribution of patients.

Out of the three factors primarily responsible for causing Diabetic foot ulcer, the predominant cause is Neuropathy which was observed in 77.78% (70 patients) of the patients in the study.



Graph 4:- Distribution of patients with Neuropathy, Angiopathy and Infection.

CONCLUSIONS

In this study Peripheral neuropathy is the predominant cause of diabetic foot ulcer, as it was observed that out of 90 patients in the study 70 patients (77.78%) had neuropathy.

Foot care is very essential in all patients having Diabetes mellitus, as it can prevent occurrence of Ulcers. A good knowledge and understanding of the disease, its complications i.e. non healing wounds, is important among the patients as it

will decrease morbidity associated with the disease.

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