

A Prospective Observational Study on Incidence of Diabetic Foot Ulcer and Prescribing Patterns of Antibiotics in Diabetic Foot Ulcer

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Abstract: Diabetes mellitus is a metabolic disorder which is characterized by multiple long-term complications that affect almost every system in the body. Foot ulcers are one of the main complications of diabetes mellitus. The setting for the study was the multihospital setting. A standard proforma was used to perform a survey of the prescription charts of all patients in a hospital from a questionnaire. The proforma included details of patient age and sex, department, indication for Diabetic foot ulcer, type of antibiotics prescribed chief complaints, duration of therapy and details of other prescribed medications. study with 170 patient populations takes us to the fact that rational use of antibiotics were shown to be 40% of the study population have shown to be with a definitive while 54.59% shown with a prophylactic use.

Keywords: 1. Diabetic Foot Ulcer 2. diabetes mellitus 3. Diabetic foot ulcer 4. Patient care

INTRODUCTION

DIABETES MELLITUS:

Diabetes mellitus is a metabolic disorder which is characterized by multiple long-term complications that affect almost every system in the body. Foot ulcers are one of the main complications of diabetes mellitus[1]. The term Diabetes is introduced in the medical literature by Aretacus of Cappdocia. It is known as sweet urine disease [2]. The incidence of Diabetes is increasing. It is rapidly increasing for the last three decades. It is around 0.2%-0.3% in 19th century, around 4% in 1980s and around 10% in 21st century [3]. According to epidemiological studies, the number of patients with DM increased from about 30 million cases in 1985, 177 million in 2000, 285 million in 2010, and estimated if the situation continues, more than 360 million people by 2030 will have DM[20,21].

Patients with DM are prone to multiple complications such as diabetic foot ulcer (DFU).

DFU is a common complication of DM that has shown an increasing trend over previous decades [22-24]. In total, it is estimated that 15% of patients with diabetes will suffer from DFU during their lifetime [25]. Even though there are many complications affecting the person with diabetes, none are more devastating than those complications involving the foot [4]. Diabetic foot lesions have significant health and socioeconomic problems holding adverse effects on the quality of life of the patient and imposing a heavy economic burden on the patient's family [5]. Patients with DM are prone to multiple complications such as diabetic foot ulcer (DFU). DFU is a common complication of DM that has shown an increasing trend over previous decades [22-24].

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PATHOPHYSIOLOGY:

A prior DFU is an almost obligatory prerequisite for DFIs. This is true even though, in some cases, the wound may have closed over before DFI presentation. Numerous observational studies have indicated that DFUs have a multifactorial nature. It is well established that insulin deficiency (absolute or relative) is the basis of the biochemical abnormalities that lead to the organic complications of diabetes mellitus (namely, neuropathy) and the biological deficits of tissue healing and regeneration. It has also been established that perfect and persistent glycemic

control, with either insulin or oral agents, stop and probably regress these complications. DFUs result from a complex interaction of two major risk factors: neuropathy and peripheral vascular disease. Neuropathy, both symmetric and bilateral, plays the main role with varying degrees of alterations in autonomic, sensory, and motor functions. Playing a secondary role is peripheral vascular disease resulting from atherosclerosis (Figure 1). Approximately 50 to 60% of all DFUs can be classified as neuropathic. Signs or symptoms of vascular compromise are observed in 40 to 50% of all patients with the vast majority having neuroischemic ulcers, and only a minority of patients have purely ischemic ulcers [30].

METHODOLOGY

Study Site:- Prospective observational study. Study was conducted in the department of general medicine and surgery in secondary care hospital.

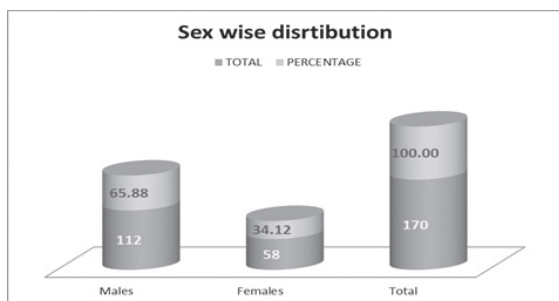
SOURCE OF DATA

1. Patients who are visiting to general medicine and surgical departments with diabetes.
2. Patients who are admitted as inpatients with diabetic foot ulcer.
3. Analysis of prescriptions of patients with diabetic foot ulcer.
4. Data collection of diabetic patients with diabetic foot ulcer.

RESULTS

SEX WISE DISTRIBUTION:

In our study among the 170 patients, 112 were male (65.88%) as compared to 58 female patients (34.12%).

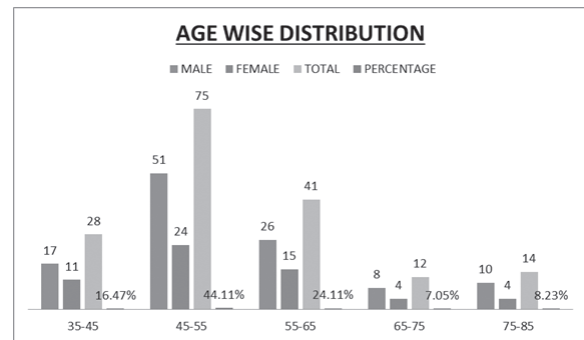


AGE WISE DISTRIBUTION:

Overall 75 patients belonged to the age group of 45-55yrs,accounting for 44.11 of the total;41 patients

belonged to the age group of 45-55 years accounting for 24.11%.28 patients belonged to the age group of 35-45 years ,accounting for 16.47%of patients. And 12 patients belonged to the age group of 65- 75yrs, accounting for 7.05%.14 patients belonged to the age group of 75-85 years ,accounting for 8.23% of the patients. Mostly Diabetic foot ulcer is occurring at the age group of 45-55(44.11%)

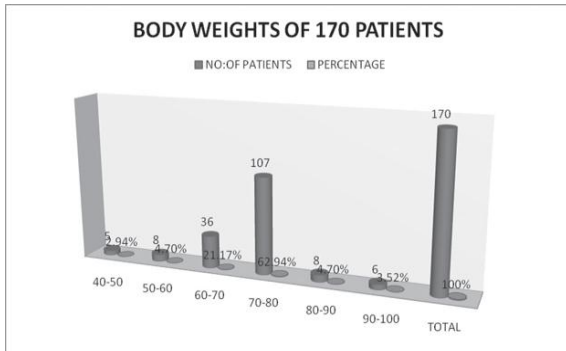
AGE	MALE	FEMALE	TOTAL	PERCENTAGE
35-45	17	11	28	16.47%
45-55	51	24	75	44.11%
55-65	26	15	41	24.11%
65-75	8	4	12	7.05%
75-85	10	4	14	8.23%



BODY WEIGHT OF PATIENTS:

In total 170 patients 5(2.94%) are between 40-50kgs,8 (4.70%)are between 50-60kgs,107(62.94%) are between 60- 70kgs,36(21.17%) are between 70-80 kgs,8(4.70%) are between80-90kgs,6(3.52%) are between 90-100kgs of body weight. Majority of the people are between the body weight of 60- 70kgs

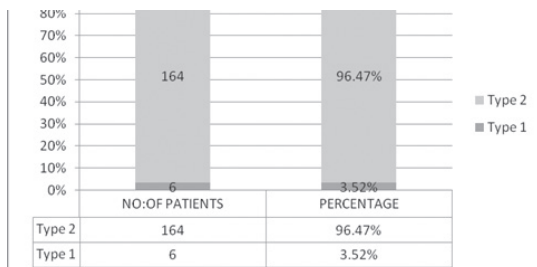
BODY WEIGHT	NO:OF PATIENTS	PERCENTAGE
40-50	5/170	2.94%
50-60	8/170	4.70%
60-70	107/170	62.94%
70-80	36/170	21.17%
80-90	8/170	4.70%
90-100	6/170	3.52%
TOTAL	170	100%



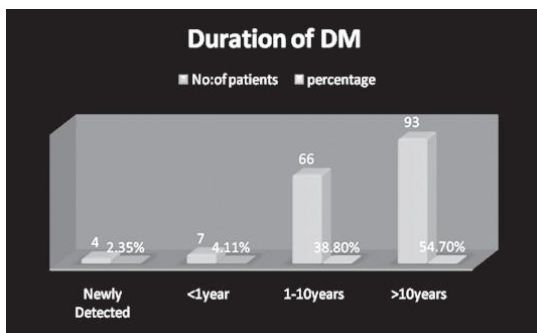
GENERAL CHARACTERISTICS OF 170 PATIENTS:

Out of 170 patients 164(96.47%) patients were of type 2 diabetes mellitus while 6(3.52%) patients were of type 1 diabetes mellitus. 93(54.7%) patients had diabetes for more than ten years and follow by 66(38.8%) patients had diabetes between 1 to 10 years. 112(65.88%) patients were having foot infection for more than one month. 58 (34.11%) patients less than one month. 10 patients (5.88%) had normal FBS range. 70 (41.17%) patients had uncontrolled FBS. 40 (23.52%) patients had HbA1c range between 7-9% follow by 69(40.58%) patients had uncontrolled HbA1c.

a. Type of Diabetes Mellitus:

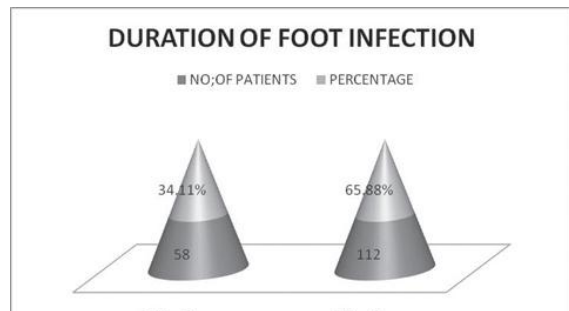


TYPE	NO:OF PATIENTS	PERCENTAGE
Type1	6	3.52%
Type2	164	96.47%



DURATION OF DIABETES MELLITUS:

DURATION	NO OF PATIENTS	PERCENT-AGE
Newly de-tected	4	2.35%
<1Year	7	4.11%
1-10Years	66	38.8%
>10Years	93	54.7%

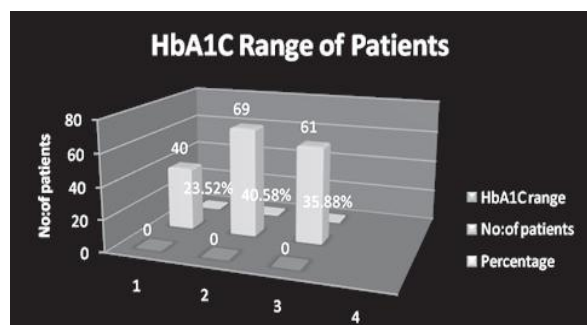


DURATION OF FOOT INFECTION:

DURATION OF INFECTION	NO:OF PATIENTS	PERCENT-AGE
<1 month	58	34.11%
>1month	112	65.88%

FBS Range:

RANGE	NO:OF PA-TIENTS	PER-CENTAGE
70-115mg/dl (Normal)	10	5.88%
115-120mg/dl (Fair control)	70	41.17%
Above 120 mg/dl (Uncon-trolled)	90	52.94%

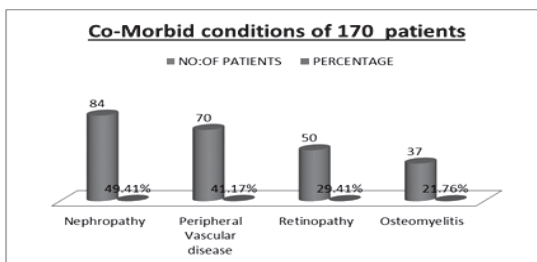


Hb A1C:

RANGE	NO:OF PA-TIENTS	PERCENT-AGE
<7% (Good Control)	40	23.52%
7-9% (Fair Control) 40.58%	69	40.58%
More than 9% (Uncontrolled)	61	35.88%

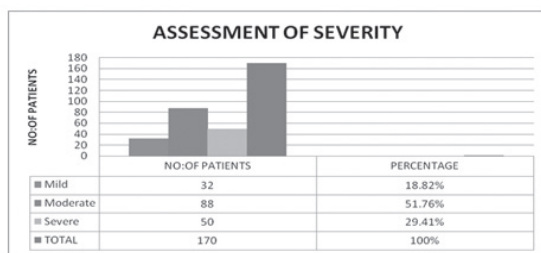
Co-Morbid conditions of 170 patients:-

Out of 241 co morbid condition of 170 patients 84(49.41%) had nephropathy, 70(41.17%) had peripheral vascular disease, 50(29.41%) had retinopathy disease, 37(21.76%) had osteomyelitis.



ASSESSMENT OF SEVERITY OF DIABETIC FOOT ULCER:-

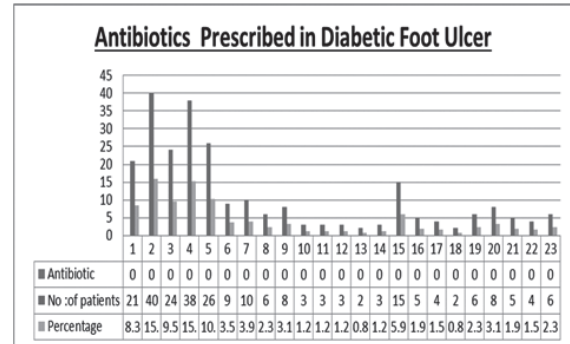
For the assessment of severity of diabetic foot ulcer they are classified into Mild, Moderate and Severe. Among 170 patients,32(18.82%) of patients are in mild stage,88(51.76%)are in moderate stage,50(29.41%) are in severe stage



AREA OF INVOLVEMENT:- Antibiotics Prescribed in Diabetic Foot Ulcer:-

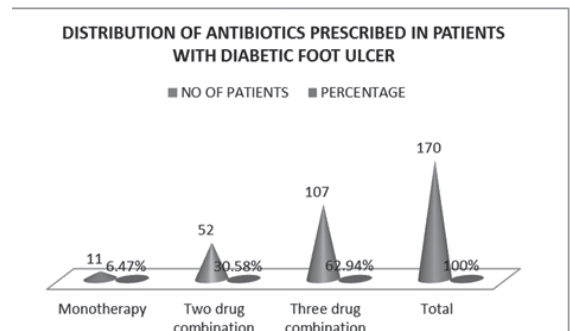
The antibiotics prescribed in Diabetic foot ulcer are mostly Amoxicillin clavalunate for 40(15.94%) patients, cefixime for 38(15.94%) patients, amoxicillin for 21(8.37%) patients, Cefixime for 38(15.14%) patients, Ceftriaxone for 26(10.36%) patients , Cefotaxime for 9 (3.59%) patients, Cephalexin for 10(3.98%)patients, Cefuroxime for 6(2.39%) patients, Cefprozil for 8(3.19% patients), Cefodoxime for 3(1.20%), Cefoperazone-Sulbactum for 391.205 patients, Cefotaxime – Sulbactum for 3(1.20%)patients, Cefpodoxime –Azithromycin for 2(0.805%) patients, Piperillin-Tazobactum for

15(5.98%) patients, Trimethoprim sulfamethoxazole for 5(1.99%)patients, Furopenem Sodium for 4(1.59%) patients, Aztreonam for 2(0.80%) patients, levofloxacin for 6(2.3950 patients, Dicloxacillin for 8(3.19%) patients, Gentamycin for 5(1.99%) patients, Vancomycin for 4(1.59%) patients, Ampicillin 6(2.39%).



DISTRIBUTION OF ANTIBIOTICS PRESCRIBED IN PATIENTS WITH DIABETIC FOOT ULCER:-

In our study antibiotic drugs were prescribed as monotherapy in 11 (6.47%) patients. Many patients were prescribed with combination therapy to control diabetes foot infection as it is a progressive metabolic disease which is difficult to control with just one drug. Two drug combinations were prescribed to 52 (30.58%) patients and 3 drug combinations were prescribed to 107 (62.94s%) patients.



CONCLUSION

This study has provided base line data regarding the prescription pattern of antibiotics drugs in diabetic patients with ulcer. We have found large variations in the antibiotic regimens used to treat patients with diabetic foot infections. Aminoglycosides, pencillins, cephalosporins and quinolones were the most frequently prescribed drugs. Most of the diabetic patients with ulcer have co morbid conditions and require more than one antibiotic and analgesic drug for their treatment.

Foot ulcers in patients with diabetes is common, and frequently leads to lower limb amputation unless a prompt, rational, multidisciplinary approach to therapy is taken.

From the data obtained from the patient questionnaire most of the patients are uneducated and working as Farmers and coolys. The major reason for DFUs and DFIs in them are due to lack of awareness on appropriate foot care. So, as a health care professional its our responsibility to provide awareness about DFUs and DFIs and about their complications if left untreated. Its better to provide the information regarding foot care in the form of leaflets, Pamphlets for easy understanding to the patient

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