



## A STUDY OF COMPLICATION AND MANAGEMENT OF DIABETIC FOOT ULCER IN A MEDICAL COLLEGE OF NORTH BIHAR

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### ABSTRACT

Long duration of diabetes mellitus leads to pathological changes such as neurological abnormality and peripheral vascular changes in foot which gives rise to ulcer formation in foot. These problems are aggravated by lack of proper health education. Aim-The study was carried out to evaluate patients of diabetic foot ulcer with their clinical profile, complication and different mode of treatment. A total of 50 patients with diabetic foot ulcer who presented in surgery department of SKMCH Muzaffarpur between February 2015 to June 2017 were included in study. Approval from ethical committee of the institution was taken. Result –Most of the patients were males. Most common age group affected was 51-60 year. Debridement with split skin graft was most commonly performed procedure in 24 (48%) patients. Septic shock was most common complication present in 20% cases. Conclusion-Proper health education about diabetes mellitus and its lower limb complication and foot care along with strict control of blood sugar with surgical intervention hold the key to successful management of diabetic foot ulcer.

**KEYWORDS :** .Diabetic foot ulcer(DFU), Septic shock, Debridement, Split skin graft

### INTRODUCTION

Diabetes is a chronic debilitating disease which affects different organ of body including lower limb. Long standing and poorly controlled diabetes leads to septic, neurological and peripheral vascular changes in foot giving rise to ulceration, infection and gangrene. Diabetic mellitus has acquired an epidemic position as worldwide 131 million people were estimated to be affected with diabetes in 2000. It was projected to increase to 366 millions by 2030[1]. In India about 50.8 million people are affected with diabetes and it is expected to increase to 87 million by 2030[2]. Previous study reports that diabetes patients have up to 25% lifetime risk of developing a foot ulcer[3]. The annual incidence of diabetic foot ulcer is 3% and reported incidence in US and UK ranges as high as 10%[3]. Foot ulcer develops in about 15% of patient with diabetes and is common cause of hospitalization[5].

About 28% of patient with diabetes may require some form of amputation [6,7]. Up to 85% of all amputation in patient with diabetes are preceded by foot ulcer[8,9]. It shows the importance of prevention and proper management of foot ulcer. Diabetic patients have high mortality around 50% in 5 year following initial amputation[10]. Diabetes mellitus with foot ulcer increase the risk of amputation due to deep seated infection, peripheral neuropathy and ischemia. This condition is worsened by lack of self care and health education. Our aim of study is to evaluate the clinical profile, complication and different mode of treatment of patient with diabetic foot ulcer.

### Material & Method

50 patients with diabetic foot ulcer treated in Sri Krishna Medical College during February 2015 to June 2017 were included in study. Written informed consent was taken from each patient. An approval from ethical committee of the institution was taken. A detailed clinical history was taken from each patient and thorough physical examination including neurological examination was performed. Routine blood investigation including blood sugar, serum level was done for each patient. Special investigation like serum electrolyte, urinary ketones, blood culture were also performed. Pus sample was taken from each wound and sent for culture and sensitivity. Patient with other disease causing ulcer in foot were excluded from study.

### RESULTS

Out of 50 patients with diabetic foot ulcer 36(72%) were males 14 (28%) were females. Male to female ratio is 2.57:1. Patients were between 20 to 80 years of age. Majority of patients were in age group 51-60 year. Next common age group was 61-70 year (Table-1).

**Table 1-AGE AND SEX DISTRIBUTION**

Age group	Male	Female	Total	Percentage
0-20	0	1	1	2%
20-30	1	0	1	2%
31-40	5	3	8	16%
41-50	5	4	9	18%

51-60	13	2	15	30%
61-70	10	3	13	26%
71-80	2	1	3	6%
TOTAL	36	14	50	

In our study 20(40%) patients were dependent living sedentary life. 10 pt (20%) were doing office job, business. Another 20%(10) pt were doing work with moderate physical activity like carpenter. 40% (20) pt were heavy manual worker. Literature shows that disease is common in person with sedentary life. But our study shows it is equally common in hard working people. In this study 52% were from middle and upper class and 48% from low income group.

In our study it was found that majority 84% (42) pt did not know about lower limb complication of diabetes. Only 16%(8) patients were aware of it. Only these patients were on regular treatment. The majority 80% (40) patients were on irregular treatment. Two patients were not taking any kind of medication. Blood sugar of all these patients either on irregular treatment or not taking any medication (84%) were more than 220mg/dl. Peripheral neuropathy was present in 31(62%) pt and peripheral vascular disease in 17(34%) pt in our study.

Pus samples were taken from each wound and were sent for culture and sensitivity. Out of 50 samples 2(4%) Pus samples were sterile. Staphylococcus was most common organism present in 16(32%) samples [Table-2]. Pseudomonas aeruginosa was present in 28%(14) samples. Most of the sample 70%(35) were polymicrobial. In 4(8%) fungus like candida was also present.

**Table 2-Bacteriology of the lesion**

Bacteria	No. of sample	Percentage
Staphylococcus	16	32%
Pseudomonas	14	28%
E.coli	7	14%
Klebsiella	4	8%
Proteus	4	8%
E.faecalis	2	4%
Acinetobacter	1	2%

Out of 50 patients 16 presented with various complications. Most common complication was septic shock in 8(16%) cases. It was manifested by fall in systolic blood pressure below 90mmHg. 4 (8%) had ketosis, 2(4%) had hyponatremia and another 4%(2) patient had both shock and ketosis.

**Table 3-Different mode of treatment**

Treatment	Number of patient	Percentage
Debridement and split skin graft	24	48%
Incision and drainage	10	20%
Disarticulation of toe	7	14%

Below knee amputation	4	8%
Above knee amputation	1	2%
Medical therapy alone	4	8%

Patients with diabetic foot ulcer were treated by different method [Table-3]. Most of the patients, 24(48%) were treated by debridement and split skin graft. 4(8%) pt were treated by medical therapy alone. 10 (20%) required incision and drainage. Disarticulation of toe was carried out in 7 patient. Below knee amputation was performed in 4(8%) pt above knee amputation in 1(2%) pt. Most of the patients 54%(27) pt had to stay in hospital for more than three weeks.

## DISCUSSION

In our study there was male predominance which are in conformity with study by Iswar C Muduli et al [12]. In our study most of the people were not aware of diabetic limb complications which was comparable to study by M. Madan et al [14]. Lack of awareness about complication leads to noncompliance of treatment and poor diabetic control. In our study neuropathy was more prevalent which led to ignoring of minor trauma and proper foot care which led to ulcer formation. Ulcer formation is also added by other factor which are usually associated with diabetic patient like peripheral vasculopathy, alcoholism, smoking, sedentary life style. Diabetic foot ulcer is infected with different bacteria. Increased sugar level in blood acts as good medium for bacterial growth. In our study staphylococcus was most common gram positive bacteria and Pseudomonas was most common gram negative bacteria found in diabetic foot ulcer.

Diabetic foot ulcer is associated with life threatening complication like septic shock. So it is important to recognize and treat the condition at an early stage. Debridement followed by split skin graft was most commonly performed surgical intervention. Diabetic foot ulcer pt there were gangrenous changes in toe so we had to disarticulate the toe in 7 patient. There was gangrene of whole foot in 4(8%) pt so we had to take recourse to below knee amputation in these patient. In one patient there was extensive gangrene up to knee so we had to do above knee amputation in one patient. Amputation rate is 24% in our study which is less than the study by Iswar C Muduli et al [12].

## CONCLUSION

Diabetic foot ulcer cause great disability along with financial loss to the patients. Health education with strict control of blood sugar and proper foot care is key to management of diabetes foot ulcer.

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