

ORIGINAL RESEARCH**A study of the clinical profile and factors associated with diabetic foot at tertiary health care center****Vijay Govind Patel¹, Sachin S Jain², Pramod Nagorao Lokare³, Swapnil Madankar⁴**¹Assistant Professor, Department of General Surgery, ACPM Medical College, Dhule, Maharashtra, INDIA.²Assistant Professor, Department of General Surgery, ACPM Medical College, Dhule, Maharashtra, INDIA.³Assistant Professor, Department of General Surgery, Vilasrao Deshmukh Government Medical College, Latur, Maharashtra, INDIA.⁴Associate Professor, Department of General Surgery, Shri Vasant Rao Naik Government Medical College Yavatmal, Maharashtra, INDIA.

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ABSTRACT

Background: Diabetes is one of the most prevalent chronic diseases: in 2010, one study reported that 285 million adults worldwide had diabetes and this figure is projected to rise to 439 million by the year 2030. **Aims and Objectives:** To study the Clinical profile and Factors associated with Diabetic foot at Tertiary health care center. **Methodology:** This was a prospective study of consecutive Diabetic patients with foot complications admitted in the surgical wards of Surgical department of a tertiary health care center during the period of January 2016 – January 2017. A total of 168 cases were analyzed during this period. Detailed history and thorough clinical examination was done in all cases. All details of the clinical features and associated features and all the details of investigations carried out were noted. Statistical analysis was done by Chi-square test calculated by SPSS 19 version software. **Result** The majority of the patients were in the age groups 60-69 were 30.00%, followed by 50-59-24%. The majority of the patients were Male-52.98% and Female were 47.02%. There was significant family history of diabetes mellitus in 68.00% of patients ($p < 0.01$). The majority of the patients developed lesions by Trauma i.e. 69.00% and Spontaneously in 31.00%, this was statistically significant ($P < 0.01$). As per Clinical Pattern Abscess was present in 3% cases, cellulitis in 25% Cases, Ulcer in 52% cases and Gangrene in 29 % Cases and Joint involvement in 5%. Most of the patients presented with Wagner Grade II type of foot lesions. i.e. 58.33%. Hence early and effective management can save the limb. The arteriopathy was present in 89% as compared to absent 11% ($P < 0.01$). Neuropathy was present in 26% as compared to absent in 74% of patients presenting with diabetic foot lesions. Patients with Neuropathy presented with Higher Grades of Diabetic foot lesions. **Conclusion:** It can be concluded from our study that the majority patients were in the age group of 60-69, the associated factors were family history, history of trauma, presence of arteriopathy and neuropathy etc.

Key Words: Diabetic foot, Diabetic ulcers, Wagner Grade of lesions, Arteriopathy, Neuropathy.

Corresponding Author: Dr Swapnil Madankar, Associate Professor, Department of Surgery, Shri Vasant Rao Naik Government Medical College Yavatmal 445001

Email: spmadankar@gmail.com

INTRODUCTION

Diabetes is one of the most prevalent chronic diseases: in 2010, one study reported that 285 million adults worldwide had diabetes and this figure is projected to rise to 439 million by the year 2030¹. Such a profound demographic shift is likely to yield a corresponding increase in the prevalence of diabetes chronic complications, including those in the lower extremity, the diabetic foot². It is estimated that the annual population-based incidence of a diabetic foot ulcer (DFU) ranges from 1.0% to 4.1%. The lifetime incidence may be as high as 25%³. Despite the efforts of conservative therapy, there will always be a percentage of ulcers that necessitate hospitalization. These cases may require surgical debridement, resection of distal osseous and soft tissue structure, endovascular intervention, daily dressings, strict glycemic control, and intravenous antibiotic therapy for eradication of infection^{4,5}. Foot problems in diabetics can frequently be life or limb threatening, yet have not received the same level of attention as other diabetes complications⁶.

MATERIAL AND METHODS

This was a prospective study of consecutive Diabetic patients with foot complications admitted in the surgical wards of Surgical department of a tertiary health care center during the period of January 2016 – January 2017. A total of 168 cases were analyzed during this period. Detailed history and thorough clinical examination was done in all cases. All details of the clinical features and associated features and all the details of investigations carried out were noted. Statistical analysis was done by Chi-square test calculated by SPSS 19 version software.

RESULT

Table 1: Distribution of the Patients as per the Age

<u>Age</u>	<u>No.</u>	<u>%</u>
0-19	0	0%
20-29	2	1.00%
30-39	7	4%
40-49	37	22%
50-59	40	24%
60-69	50	30.00%
70-79	25	15.00%
80-89	7	4.00%
Total	168	100%

The majority of the patients were in the age groups 60-69 were 30.00%, followed by 50-59-24%, 40-49 -22%, 70-79-15.00%, 30-39-4%, 80-89-4%, 20-29 were 1.00%

Table 2: Distribution of the patients as per the Sex

<u>Sex</u>	<u>No.</u>	<u>Percentage (%)</u>
Male	89	52.98%
Female	79	47.02%
Total	168	100 %

The majority of the patients were Male-52.98% and Female were 47.02%

Table 2: Distribution of the Patients as per the Family History

Family History of Diabetes	No. of Patients	%
Present	114	68.00%
Absent	54	32.00%

There was significant family history of diabetes mellites in 68.00% of patients ($p < 0.01$).

Table 3: Distribution of the Patients as per the Precipitating Causes

Duration	No. of Patients	%
Spontaneous	52	31.00%
Trauma	116	69.00%

The majority of the patients developed lesions by Trauma i.e. 69.00% and Spontaneously in 31.00%, this was statistically significant ($P < 0.01$)

Table 4: Clinical Pattern of Presentation of Diabetic Foot Lesions

Presentation	No. of Patients	%
Abscess	5	3
Cellulitis	42	25
Ulcer	87	52
Gangrene	29	17
Joint involvement	5	3
	168	100

As per Clinical Pattern Abscess was present in 3% cases, cellulitis in 25% Cases, Ulcer in 52% cases and Gangrene in 29 % Cases and Joint involvement in 5%.

Table 5: Presentation of Various Grades of Diabetic lesions (Based on Wagner's Classification)

Grade	No of Patients	Percentage (%)
0	1	0.60
1	5	2.98
2	98	58.33
3	27	16.07
4	32	19.05
5	5	2.98
Total	168	100.00

Most of the patients presented with Wagner Grade II type of foot lesions. i.e. 58.33%.

Table 6: Clinical assessment of Arteriopathy

Peripheral Pulses	No of Cases	Percentage%
Absent	18	11
Present	150	89

The arteriopathy was present in 89% as compared to absent 11% ($P < 0.01$)

Table 7: Distribution of Patients as per the Prevalence of Neuropathy

Neuropathy	No. of cases	%
Present	44	26%
Absent	124	74%

Neuropathy was present in 26% as compared to absent in 74% of patients presenting with diabetic foot lesions.

DISCUSSION

Abbott *et al*⁷ reported that more than 2% of diabetic patients will develop new foot ulcers annually. The prevalence of DFU varied between 4% and 20.4% among hospital-based studies in individuals with diabetes^{8,9} According to some authorities^{10,11}, diabetic foot problems are responsible for 23–50% of the hospital bed occupancies by diabetic patients. Our study documented a 16.2% prevalence rate of DFU among consecutive, unselected diabetic patients admitted to the largest medical inpatients service in Semarang, Indonesia. These patients have a significant risk of poor-healing ulcers, foot infection, and LEA, which is reportedly more frequent among low socioeconomic group patients with precarious hygiene conditions¹² In our study we have seen that The majority of the patients were in the age groups 60-69 were 30.00%, followed by 50-59-24%, 40-49 -22%, 70-79-15.00%, 30-39-4%, 80-89-4%, 20-29 were 1.00%. The majority of the patients were Male-52.98% and Female were 47.02%. There was significant family history of diabetes mellites in 68.00% of patients ($p < 0.01$). The majority of the patients developed lesions by Trauma i.e. 69.00% and Spontaneously in 31.00%, this was statistically significant ($P < 0.01$) As per Clinical Pattern Abscess was present in 3% cases, cellulitis in 25% Cases, Ulcer in 52% cases and Gangrene in 29 % Cases and Joint involvement in 5%. Most of the patients presented with Wagner Grade II type of foot lesions. i.e. 58.33%. Hence early and effective management can save the limb. The arteriopathy was present in 89% as compared to absent 11% ($P < 0.01$). Neuropathy was present in 26% as compared to absent in 74% of patients presenting with diabetic foot lesions. Patients with Neuropathy presented with Higher Grades of Diabetic foot lesions. These findings are similar to Rogers P Augustine *et al*¹³ they found Peak Incidence of diabetic foot was seen in the Age group of 50- 69years. Increased prevalence was seen among males (69%). In males increased prevalence was seen in the age group of 50-59 years and in females in age group of 60-69 years. There was significant family history of diabetes mellites in 67.5% of patients ($p < 0.0001$). Foot lesions developed either due to trauma or spontaneously. But most of the neuropathic patients would have not noticed or felt the trauma. As per Clinical Pattern Abscess was present in 2% cases, cellulitis in 23% Cases, Ulcer in 55% cases and Gangrene in 19.5% Cases. Most of the patients presented with Wagner Grade II type of foot lesions. Hence early and effective management can save the limb. These patients were subjected to Duplex Scan. Neuropathy was present in 30.5% of patients.

CONCLUSION

It can be concluded from our study that the majority patients were in the age group of 60-69, the associated factors were family history, history of trauma, presence of arteriopathy and neuropathy etc.

REFERENCES

1. Shaw JE, Sicree RA, Zimmet PZ. Global estimates of the prevalence of diabetes for 2010 and 2030. *Diabetes Res Clin Pract.* 2010; 87:4–8. DOI:10.1016/j.diabres.2009.10.007

2. Van Dieren S, Beulens JWJ, van der Schouw YT, et al. The global burden of diabetes and its complications: an emerging pandemic. *Eur J Cardiovasc Prev Rehabil.* 2010; 17(Suppl. 1):S3–S8. DOI:10.1097/01.hjr.0000368191.86614.5a
3. Reiber GE. Epidemiology of foot ulcers and amputation in the diabetic foot In: Bowker J, Pfeifer M., editors. *The diabetic foot.* St. Louis: Mosby; 2001. p. 12–32.
4. Adam DJ, Raptis S, Fitridge RA. Trends in the presentation and surgical management of the acute diabetic foot. *Eur J Vasc Endovasc Surg.* 2006; 31:151–156. DOI:10.1016/j.ejvs.2005.05.039
5. El-Maadawy G, Sabry A, Mohi Elden H, et al. Different procedures in management of diabetic foot infections. *Trends Med Res.* 2010; 5:16–30. DOI:10.3923/tmr.2010.16.30
6. Waspadji S. Kaki diabetik: kaitannya dengan neuropati diabetik In: Djokomoeljanto R, Darmono Suhartono T., editors. *Kaki diabetik: patogenesis dan penatalaksanaan.* Semarang: Diponegoro University Press; 1996. p. E1–E23.
7. Abbott CA, Carrington AL, Ashe H, et al. The north-west diabetes foot care study: incidence of, and risk factors for, new diabetic foot ulceration in a community-based patient cohort. *Diabet Med.* 2002; 19:377–384. DOI:10.1046/j.1464-5491.2002.00698
8. Bouter KP, Storm AJ, de Groot AJ, et al. The diabetic foot in Dutch hospital: epidemiological features and clinical outcome. *Eur J Med.* 1993; 2:215–218.
9. Benotmane A, Mohammedi F, Ayad F, et al. Diabetic foot lesions: etiologic and prognostic factors. *Diabetes Metab (Paris).* 2000; 26:113–117.
10. Smith DM, Weinberger M, Katz BP. Predicting nonelective hospitalization: a model based on risk factors associated with diabetes mellitus. *J Gen Intern Med.* 1987; 2:168–173. DOI:10.1007/BF02596146
11. Waugh NR. Amputations in diabetic patients – a review of rates, relative risks and resource use. *Comm Med.* 1988; 10:279–288. DOI:10.1093/oxfordjournals.pubmed.a042420
12. Abbas ZG. Reducing diabetic limb amputations in developing countries. *Expert Rev Endocrinol Metab.* 2015; 10:425–434. DOI:10.1586/17446651.2015.1058151
13. Rogers P Augustine, B Kanchana, G K Venkatachalam. Clinical pattern of diabetic foot lesions and their management. *International Medical Journal* February 2016; 3(2): 155-158