

Severity and Outcome of Patients Presenting With Diabetic Foot at Tertiary Care Center at Gujrat

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ABSTRACT

Aim: To detect the Severity and outcome of patients presenting with Diabetic Foot at tertiary care center at Gujrat.

Study design: cross sectional study.

Place and Duration of Study: Study was conducted for a period of two years from 1st January 2016 to 31st December 2017 in Aziz Bhatti Shaheed Teaching Hospital Gujrat.

Methods: Total 274 adult patients diagnosed as diabetes mellitus with complication of diabetic foot were included in the study. The patients were enrolled from surgical out-patient department, emergency and from other wards of the hospital. Known diabetic females from gynecology and obstetrics were also included due to problem of diabetic foot. A detailed history was obtained regarding the duration of the diabetes and its type. They were asked about compliance and control of diabetes. A detailed history was obtained about the foot ulcer regarding onset duration and progression.

Results: The data revealed that diabetic foot problem affected females more frequently 159(58%) than males 115(42%). The most common age group of diabetic patients with foot involvement were the 5th and 6th decades. Out of 274 patients, 214(78%) were known diabetics and 60(22%) were diagnosed incidentally after admission in the surgery department. Out of 214 known diabetic patients, 77(36%) were on insulin therapy, 98(46%) were on oral hypoglycemic and 39(18%) were not taking any drug. The grading of diabetic foot was done according to Wagner classification. The commonest presentation was grade IV of diabetic foot in Wagner classification, with 96(35%) patients followed by Grade III in 77(28%) patients and followed by Grade II in 56(20%) patients. Thirty (10%) patients were enrolled in grade I and in grade V of Wagner classification only 15(5.4%) patients were admitted. These patients were managed according to Wagner classification. Only conservative management with good diabetic control, antibiotic cover and foot care was carried out in 25(9.12%) patients. Surgical intervention was carried out in rest of 249(90.88%) patients. Out of 249 patients who were provided surgical treatment, the commonest procedure was major debridement that was performed in 105(42.16%) patients; minor debridement was performed in 70(28.11%) patients.

Conclusions: Diabetic foot ulcers are very common among diabetic population. Early detection and treatment may help to decrease the chances of amputation. Proper hygiene and foot care education in diabetic patients may be an important way of dealing with this major problem.

Keywords: Diabetic foot, Wagner's classification,

INTRODUCTION

Diabetes mellitus is a global public health threat that has increased dramatically in last twenty years^{1,2}. According to the epidemiological studies, the numbers of patients of diabetes mellitus are increasing rapidly. In 1985, diabetic patients were 30 million which increased to 285 million in 2010. If it continues as such then in 2030 count may reach to 360 million^{3,4}.

Patients with diabetes mellitus are prone of developing multiple complications and one of them is diabetic foot ulcer. Diabetic foot ulcer has shown an increasing trend in last few years⁵⁻⁷.

It is estimated that more than 15% patients with diabetes mellitus may suffer with the problem of diabetic foot ulcer any time in life 8.

The prevalence of diabetic foot ulcer is very difficult to detect but the estimated prevalence may be 4-27%⁹⁻¹¹.

Diabetic foot ulcer is a major source of morbidity and a leading cause of hospital admission in patients with diabetes mellitus^{1,5,12,13}.

Estimated hospital admissions of diabetic patients with diabetic foot ulcer are 20%. Diabetic foot ulcer can lead to problem of infection, gangrene, amputation and even death if proper care is not given¹⁴.

Once diabetic foot ulcer developed, it may progress rapidly and it may lead to amputation. The rate of amputation in patients with diabetes mellitus with diabetic foot ulcer is 15% higher than in non-diabetic patients. It is estimated that 50-70% of all amputations may be due to diabetic foot ulcers⁸.

Worldwide it is reported that one leg is amputated due to diabetic foot ulcer after every 30 years in diabetic patients. Moreover diabetic foot ulcer is responsible for

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emotional and physical distress and financial loss that lowers the quality of life^{9,15}.

For proper understanding and treatment plan of diabetic foot ulcer, a well-designed classification of diabetic foot ulcer is necessary. The Wagner classification is the most commonly used for grading of diabetic foot ulcers. Wagner developed a classification system and a treatment algorithm for each grade of the diabetic foot ulcer. He asserted that ischemic index derived from Doppler flow pressures is an essential baseline test to predict ulcer healing. The Wagner's classification was developed in 1970 and worldwide was accepted for better care of diabetic foot ulcer. There are six grades 0-5, the first four grades are based on physical depth of the lesion and last two grades are based on extent of gangrene and lost perfusion in the foot. The problem with the Wagner's classification is that it does not address all diabetic foot ulcerations and infections. Only one of six grades address infection. Moreover the classification has limited ability to identify and describe vascular disease as a separate risk factor^{4,7,8,9,16}.

Table 1: Wagner classification of diabetic foot

Grade 0	Foot symptoms like pain only
Grade 1	Superficial ulcers
Grade 2	Deep ulcers
Grade 3	Ulcer with bone involvement
Grade 4	Forefoot gangrene
Grade 5	Full foot gangrene

MATERIALS AND METHODS

Study was conducted for a period of two years from 1st January 2016 to 31st December 2017 in Aziz Bhatti Shaheed Teaching Hospital Gujrat. Total 274 adult patients diagnosed as diabetes mellitus with complication of diabetic foot were included in the study. The patients were enrolled from surgical out-patient department, emergency and from other wards of the hospital. Known diabetic females from gynecology and obstetrics were also included due to problem of diabetic foot. A detailed history was obtained regarding the duration of the diabetes and its type. They were asked about compliance and control of diabetes. A detailed history was obtained about the foot ulcer regarding onset duration and progression. Foot examination was performed in detail and ulcers were classified according to Wagner's classification. Required investigations for diabetes mellitus was done like blood sugar level. Culture of the wound swab was also sent. Vascular evaluation was performed checking capillary refill and distal pulses of the foot which included dorsalis pedis artery, posterior tibial artery, popliteal artery and femoral artery. Neurological examination was done including light touch, pinprick, position sense and vibration sense on every patient, and data was recorded on the specified proforma. After evaluation the patients were managed by classifying their disease according to Wagner's classification for diabetic foot.

Descriptive statistic like mean or proportion was calculated for age, gender and presenting complaints. An intention to treat analysis for severity of diabetic foot at presentation and outcome in cases was performed.

RESULTS

Present study tested the clinical presentation, grades, and outcome in patients diagnosed as diabetic foot. A total of 274 patients were studied.

All patients were treated in surgery department under strict monitoring and supervision.

The data revealed that diabetic foot problem affected females more frequently 159 (58%) than males 115(42%). The most common age group of diabetic patients with foot involvement were the 5th and 6th decades. Out of 274 patients, 214 (78%) were known diabetics and 60(22%) were diagnosed incidentally after admission in the surgery department. Out of 214 known diabetic patients, 77(36%) were on insulin therapy, 98(46%) were on oral hypoglycemic and 39(18%) were not taking any drug. The grading of diabetic foot was done according to Wagner classification. The commonest presentation was grade IV of diabetic foot in Wagner classification, with 96(35%) patients followed by Grade III in 77(28%) patients and followed by Grade II in 56(20%) patients. Thirty (10%) patients were enrolled in grade I and in grade V of Wagner classification only 15(5.4%) patients were admitted (Table 2).

These patients were managed according to Wagner classification. Only conservative management with good diabetic control, antibiotic cover and foot care was carried out in 25(9.12%) patients. Surgical intervention was carried out in rest of 249(90.88%) patients.(Table 3)

Out of 249 patients who were provided surgical treatment, the commonest procedure was major debridement that was performed in 105(42.16 %) patients; minor debridement was performed in 70(28.11%) patients. While minor amputation was done in 45 (18.07%) patients and major amputation was done in 29(11.64%),(Table 04)

Table 2: Grades(severity) of diabetic foot at presentation (n=274)

Grade	n	Male	Female	%age
I	30	12	18	10
II	56	26	30	20
III	77	34	43	28
IV	96	35	61	35
V	15	8	7	5.4

Table 3: Management (n=274)

Management	n	%age
conservative	25	9.12
surgical	249	90.88

Table 4: Surgical Management (n=249)

Surgical procedure	n	%age
Minor Debridement	70	28.11
Major Debridement	105	42.16
Minor Amputation	45	18.11
Major Amputation	29	11.64

DISCUSSION

In this study we discussed about the approach for the treatment of the diabetic foot ulcer which is well known complication of diabetes mellitus. Early recognition and full treatment is necessary to save the patient from amputation due to progression of the disease.

Richard in 2008 and Bakri in 2012 with colleagues found the prevalence of diabetic foot ulcer as 4-27%. In our study we discussed that many patients are received on daily basis in different wards of the hospital^{9,11}.

Aalaa in 2012 and Iraj in 2013 along with colleagues discussed that diabetic foot ulcer is the major cause of morbidity in patients with diabetes mellitus. In our study we also observed that diabetic foot ulcer is very common and if not treated timely then it may lead to amputation^{5,12}.

Snyder and friends in 2009 told that 20% diabetic patients are admitted due to diabetic foot ulcer. Diabetic foot ulcer may lead to infection, gangrene, amputation and even death¹⁴. In our study, no death was observed but infection, gangrene and amputation cases were observed (Table 4).

Leone and friends in 2012 told that the rate of amputation in patients with diabetes mellitus having diabetic foot ulcer is 15% higher than in patients without diabetes. They have observed 50-70% of all amputations may be due to diabetic foot ulcers⁸. In our study minor and major amputations were done in patients (Table 4).

Richard in 2008 and Vileiyte in 2001 along with the colleagues found that diabetic foot ulcer is responsible for emotional and physical distress and financial loss was also prominent that lowers the quality of the life^{9,15}. In our study financial support was given in many patients from hospital and emotional disturbances were also addressed in some patients.

In our city, many known diabetic patients suffer from problem of diabetic foot ulcer. If a patient reaches in time, we deal with it efficiently and we don't let the diabetic foot ulcer to progress.

CONCLUSIONS

Diabetic foot ulcers are very common among diabetic population. Early detection and treatment may help to decrease the chances of amputation. Proper hygiene and foot care education in diabetic patients may be an important way of dealing with this major problem.

REFERENCES

1. Shahbazian H, Yazdanpana L, Latifi SM. Risk assessment of patients with diabetes for foot ulcers according to risk classification consensus of International Working Group on Diabetic Foot. *Pak J Med* 2013; 29: 730-4.
2. Ramachandran A, Snehalatha C, Shetty AS, Nanditha A. Trends in prevalence of diabetes in Asian countries. *World J Diabetes* 2012;3: 110-7.
3. Shaw JE, Sicree RA, Zimmet PZ. Global estimates of the prevalence of diabetes for 2010 and 2030. *Diabetes Res ClinPract* 2010;87: 4-10.
4. Whiting DR, Guariguata L, Weil C, Shaw J. IDF diabetes atlas: global estimate of the prevalence of diabetes for 2011 and 2030. *Diabetes Res ClinPract* 2011 ;94: 311-21.
5. Aalaa M, Malazy OT, Sanjari M, Peimani M, Mohajer-Tehrani M. Nurses role in diabetic foot prevention and care; a review. *J Diabetes MetabDisord* 2012;11: 24.
6. Alavi A, Sibbald RG, Mayer D, Goodman L, Botros M, Armstrong DG, et al. Diabetic foot ulcer; part II management. *J Am Acad Dermatol* 2014;70: 21.
7. Cavanagh PR, Lipsky BA, Bradbury AW, Botek G. Treatment for diabetic foot ulcers. *Lancet* 2005;366: 1725-35.
8. Leone S, Pascale R, Vitale M, Esposito S. Epidemiology of diabetic foot. *Infez Med* 2012;20 (1): 13.
9. Richard JL, Schuldiner S. Epidemiology of diabetic foot problem . *Med Interne* 2008;29 (2): 222-30.
10. Nather A, Bee CS, Huak CY, Chew JL, Lin CB, Neo S, Sim EY. Epidemiology of diabetic foot problems and predictive factor for limb loss. *J Diabetes Complications* 2008;22: 77-82.
11. Bakri FG, Allan AH, Khader YS, Younes NA, Ajlouni KM. Prevalence of diabetic foot ulcer and its associated risk factors among diabetic patients in Jordan. *J Med J* 2012;46: 118-25.
12. Iraj B, Khorvash F, Ebnesahidi A, Askari G. Prevention of diabetic foot ulcer. *Int J Prev Med* 2013;4: 373-6.
13. Fard AS, Esmaelzadeh M, Larijani B. Treatment of diabetic foot ulcer. *Intl J ClinPract* 2007;61: 1931-8.
14. Snyder RJ, Hanft JR. Diabetic foot ulcers: effect of QOL-costs and mortality and the role of standard wound care and advanced care therapies. *Ostotomy Wound Manage* 2009;55: 28-38.
15. Vileikyte L. Diabetic foot ulcers: a quality of life issue. *Diabetes Res Rev* 2001;17 : 246-9.
16. Mungambi-Nturibi E, Otiono CF, Kwasa TO, Oyoo GO, Acharya K. Stratification of persons with diabetes into risk categories for foot ulceration. *East Afr Med J* 2009;86: 233-9.