DIABETIC FOOT: A SNAPSHOT FROM A TERTIARY CARE HOSPITAL, RAWALPINDI

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ABSTRACT

Objective: To study the pattern of diabetic foot among diabetic patients visiting the tertiary care hospital.

Study Design: Observational descriptive study.

Place and Duration of Study: Combined Military Hospital (CMH) Rawalpindi and Military Hospital (MH), Rawalpindi, from June 2014 to August 2014.

Material and Methods: Fifty six known diabetic patients, undergoing treatment or follow up for diabetic foot were included in the study. A detailed medical history was obtained and recorded in the proforma. Frequencies and percentages of complications of diabetic foot were calculated. SPSS version 16 was used for data analysis.

Results: Out of fifty six diabetic patients, 35 (62.5%) were male and 21 (37.5%) were females; their mean age was 58.21 ± 7.10 years. Mean duration of Diabetes mellitus was 6.04 ± 3.35 years. The median known duration of DM2 was 11 (5-43) years. 21.4% of patients had foot infection while 35.7% patients were suffering from foot ulcers. 42.9% patients had both, foot infection along with ulcers.

Conclusion: Foot infections and foot ulcers are common feature of diabetic foot. Infected foot ulcer is a common cause of morbidity in diabetic patients, ultimately leading to dreaded complications like gangrene and amputations. All patients with diabetes should have an annual foot examination.

Keywords: Comorbidity, Diabetes Mellitus, Gangrene.

INTRODUCTION

Diabetes Mellitus (DM) at present is the most prevalent chronic disease, affecting millions of people globally. It is estimated that approximately 5.9% of the adult population is suffering from DM worldwide[1]. Foot infections and foot ulcers are among the most common and serious complications of diabetes mellitus. They are associated with increased frequency and length of hospitalization and risk of lower extremity amputation[2]. Types of infection include cellulitis, myositis, abscesses, necrotizing cellulitis, septic arthritis, tendinitis, and osteomyelitis. Foot ulcerations, infections, and charcot neuropathic osteoarthropathy are three serious foot complications of diabetes mellitus that can too frequently lead to gangrene and lower limb amputation. These three conditions are defined as diabetic foot[3].

Diabetic foot problems impose a major economic burden, and costs increase disproportionately to the severity of the condition[4]. Foot ulceration and infection are the leading risk factors for amputation. Each year more than 1 million people worldwide suffer from a leg amputation due to this condition. Between 50% and 70% of non-traumatic amputations occur in patients with diabetes. Most of these amputations are preceded by a foot ulcer. The most important factors related to the development of these ulcers are loss of sensation due to neuropathy minor trauma, foot deformity and peripheral vascular disease[5].

According to the International Diabetes Federation, 15% of people with diabetes will develop foot ulcers during their lifetime[6]. Interventions aimed at preventing foot ulcers in patients such as the comprehensive glycemic control, education of people with diabetes and their families as well as health professionals, have been shown to reduce lower extremity amputations by 50% and 85%. Prevention and prompt diagnosis and treatment are necessary to prevent morbidity, especially amputation[7].

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MATERIAL AND METHODS

This Observational descriptive study was conducted at Combined Military Hospital (CMH) Rawalpindi and Military Hospital (MH), Rawalpindi, from June 2014 to November 2014, after departmental and institutional permission.

After obtaining the written informed consent, data was collected by interviewing the fifty six known diabetic patients, who were presenting with diabetic foot or on follow up for the same, while patients suffering from any other chronic systemic illness or autoimmune disease were excluded from the study. A detailed medical history including age, sex, smoker status, duration of diabetes, diagnosed co morbidities, drug therapy, patient compliance with dietary restrictions and medications, first incidence of diabetic foot and duration of treatment was obtained and recorded in the proforma. Patient's feet were then examined for location and number of ulcers or infectious lesions.

Results were analyzed using SPSS version 16. Mean and standard deviation (SD) were calculated for age, duration of diabetes and duration of diabetic complications. Frequencies and percentages were calculated for various types of diabetic foot infections and number of foot ulcers.

Table-1: Basic demographic data of patients with diabetic foot (n = 56).

Characteristics of diabetic patients	n (%) or Mean ± SD
Gender	
Male	35 (62.5%)
Female	21 (37.5%)
Age (years)	58.2 ± 7.1
Mean duration of Diabetes mellitus (years)	6.04 ± 3.35
Smoker	
Yes	25 (44.6%)
No	31 (55.3%)
Therapy	
Insulin	24 (42.9%)
Oral hypoglycemic	26 (46.4%)
Both	6 (10.7%)
Glycemic control	
Yes	10 (17.9%)
No	46 (82.1%)
Comorbid conditions (diagnosed)	26 (46.4%)
Hypertension	12 (21.4%)
Nephropathy	10 (17.9%)
Neuropathy	4 (7.1%)

RESULTS

Out of fifty six diabetic patients, 35 (62.5%) were male and 21 (37.5%) were females, their mean age was 58.21 + 7.10 years. Mean duration of Diabetes mellitus was 6.04 + 3.35 years. Poor glycemic control was observed in 82.1% patients. (Table-1).

Frequencies of foot infections and foot ulceration among these diabetic patients have been illustrated in fig-1. Thirty six patients (64.3%) were suffering from various types of foot infections of which, gangrene was the most common foot infection experienced by 43% of these patients. (Fig-2).

Foot ulcers alone were observed in 36% patients. The most common site for ulcers was toes which were affected in 46.4% of these patients, followed by 10.7% of patients with ulcers on planter surface of foot. 14.3% of patients were having two or more than two foot ulcers.

DISCUSSION

Foot infections in diabetic patients are a common, complex and costly problem. They are potentially adverse with progression to deeper spaces and tissues and are associated with severe complications. Diabetic foot is defined as ulcer, infection, arthropathy or combination of these conditions. This complication of diabetes mellitus develops after a certain period of time in the presence of neuropathy and peripheral arterial disease (PAD) as basic etiological factors[8].

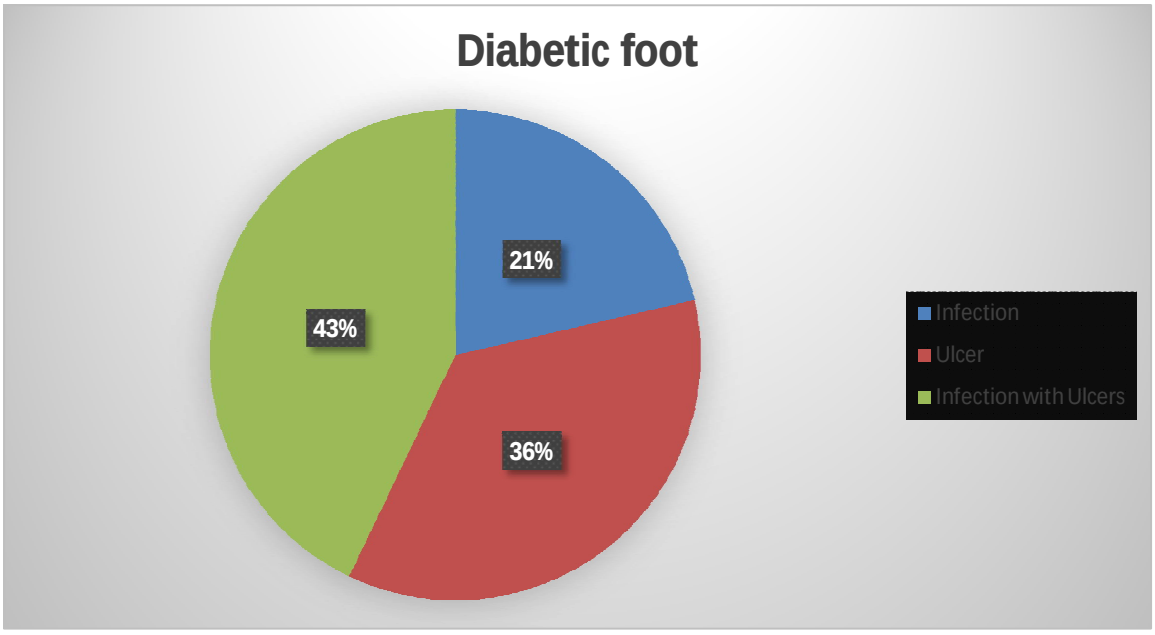

Figure-1: Frequency of various patterns of diabetic foot among diabetic patients.

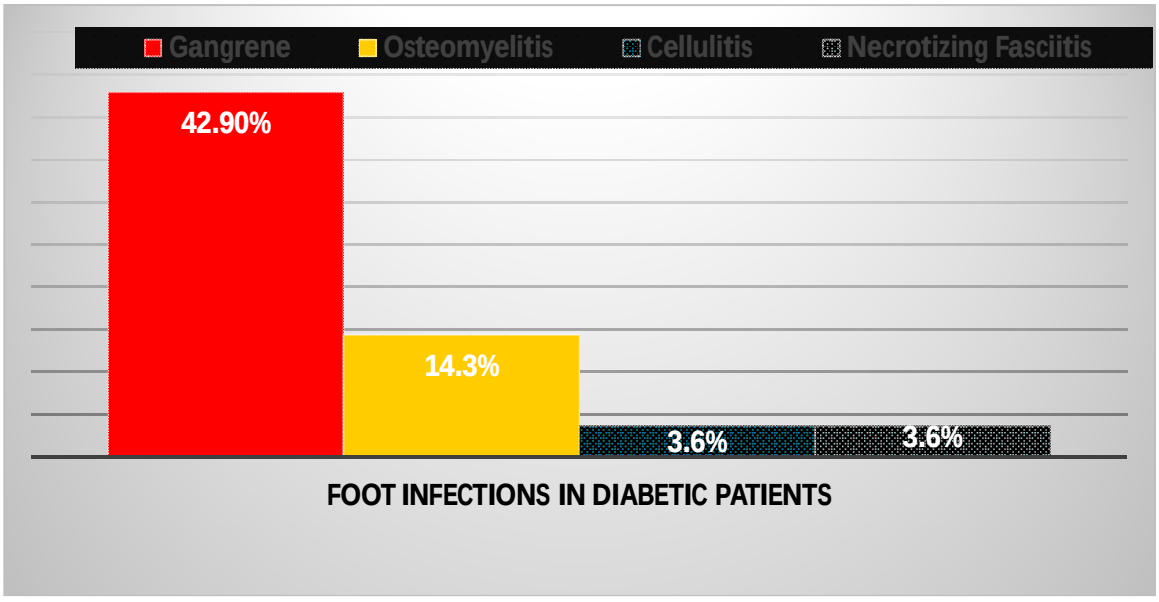

Figure-2: Frequency of various types of diabetic foot infections.

In our study diabetic peripheral neuropathy (DPN) was found in 7.1% of diabetic patients supporting the result of study which estimated the worldwide prevalence of DPN is 8.1% -12.2% among diabetic patients[9].

However a study from Saudi Arabia observed 19.9% prevalence of DPN among their diabetic population[10]. Small sample size of our study could explain this discrepancy in prevalence of DPN.

In the present study, several infectious conditions were encountered of which gangrene was most common in 66.6% of diabetic patients, followed by cellulitis in 22.2%. Gangrene infection of diabetic foot is a major risk factor for lower limb amputation[11]. Others infectious conditions like osteomyelitis and necrotizing fasciitis which were present in 11% of patients in the current study are common complications of diabetic foot. The risk for amputation in acute diabetic infections is four times higher with osteomyelitis than with soft tissue infection alone[12].

According to previous studies foot ulceration occurs in 15–25% of diabetic patients during the course of their disease[13]. Diabetic foot infection and ulcers are thought to be the most common causes of diabetes-related hospital admissions and precedes approximately 80% of non-traumatic lower-limb amputations[14]. In the current study 67.9% of patients were advised amputation due to diabetic foot complications. Our results concerning the risk of lower limb amputation associated with diabetic foot ulcers and infection are similar to findings described by Laghari et al[15].

CONCLUSION

Diabetic complications are frequent among out patients referred to general hospitals. Foot infections and foot ulcers are common causes of morbidity in diabetic patients, ultimately leading to dreaded complications like gangrene and amputations. Prevention of diabetic foot complications begins with identifying patients at risk. All patients with diabetes should have an annual foot examination. It is essential to direct efforts in patient-care giver education to allow early recognition and management of all diabetic foot problems and to build integrated pathways of care that facilitate timely access to limb salvage procedures.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

REFERENCES

1. Lambert EV, Bull F. Public health recommendations for physical activity in the prevention of type 2 diabetes mellitus. Med Sport Sci. 2014; 60: 130-140.
2. [Diabetes-related foot problems]. Duodecim. 2009; 125(17): 1907-1909.
3. Van Houtum WH. 6th international symposium on the diabetic foot. Diabetes/Metabolism Research and Reviews. 2012; 28: 1-2.
4. Driver VR, Fabbi M, Lavery LA, Gibbons G. The costs of diabetic foot: the economic case for the limb salvage team. J Am Podiatr Med Assoc. 2010; 100(5): 335-41.
5. Sun JH, Tsai JS, Huang CH. Risk factors for lower extremity amputation in diabetic foot disease categorized by Wagner classification. Diabetes Res Clin Pract. 2012; 95(3): 358-63.
6. Cigna E, Fino P, Onesti MG, Amorosi V, Scuderi N. Diabetic foot infection treatment and care. Int Wound J. 2014. doi: 10.1111/iwj.12277
7. Kroger K, Moysidis T, Feghaly M, Schafer E, Bufe A. Association of diabetic foot care and amputation rates in Germany. Int Wound J. 2014.
8. Yotsu RR, Pham NM, Oe M. Comparison of characteristics and healing course of diabetic foot ulcers by etiological classification: neuropathic, ischemic, and neuro-ischemic type. J Diabetes Complications. 2014; 28(4): 528-35.
9. Said G. Diabetic neuropathy—a review. Nature Clinical Practice Neurology. 2007; 3(6): 331-40.
10. Wang DD, Bakhotmah BA, Hu FB, Alzahrani HA. Prevalence and correlates of diabetic peripheral neuropathy in a saudi arabic population: a cross-sectional study. PLoS One. 2014; 9(9): e106935.
11. Miyajima S, Shirai A, Yamamoto S, Okada N, Matsushita T. Risk factors for major limb amputations in diabetic foot gangrene patients. Diabetes Res Clin Pract. 2006; 71(3): 272-79.
12. Malhotra R, Chan CS, Nather A. Osteomyelitis in the diabetic foot. Diabet Foot Ankle. 2014; 5.
13. Singh N, Armstrong DG, Lipsky BA. Preventing foot ulcers in patients with diabetes. Jama. 2005; 293(2): 217-28.
14. Nelson EA, Backhouse MR, Bhogal MS. Concordance in diabetic foot ulcer infection. BMJ Open. 2013; 3(1).
15. Laghari MA, Makhdoom A, Pahore MK, Raja RA, Bhutto IA. Amputation in diabetic foot. Medical Channel. 2011; 17(1).