

Diabetic Foot

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ABSTRACT

Background: Diabetic foot adds significant morbidity and mortality to patients. Diabetic patients with foot complication require significant foot care and have a risk of limb amputation. The risk factors are controllable and can be prevented with careful blood glycemic control.

Objective: To determine the risk factors and personal characteristics of diabetic foot patients and their impact on the socioeconomic status in Bahrain.

Design: A Prospective descriptive study.

Setting: Vascular and Thoracic unit, Salmaniya Medical Complex, Bahrain.

Result: Eighty-seven patients with diabetic foot were admitted in the Vascular and Thoracic surgery service from March to June 2010. Seventeen (20%) were non-Bahraini. The majority of diabetic foot patients were male, 60 (69%). Sixty-eight (78%) were diagnosed as first presentation of diabetic foot. Fifty-eight (66.5%) were 40-60 years old. Sixty (69%) were diagnosed with neuropathic foot. Thirty-five (40%) patients were diagnosed with diabetes mellitus for 10 years or less. Sixty-one (70%) patients had HbA1c more than 7. Twenty-two (25%) patients had amputation as a primary treatment. Seventeen (19.5%) patients required minor amputation and 5 (5.5%) patients had major amputation.

Conclusion: The majority of patients with diabetic foot in Bahrain are males in the productive age group. A significant number of these patients undergo amputation as a primary treatment; these patients are increasing the socioeconomic burden to the health services in Bahrain as well as to the community.

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INTRODUCTION

A diabetic patient may suffer from ulceration, infections, ischemia, and neuropathic osteoarthropathy. The diabetic foot patients are a major health concern in Bahrain and a socio-economic burden to the community. Recent studies suggest that the lifetime risk of developing a foot ulcer in diabetic patients may be as high as 25%¹. Despite the fact that patients with diabetic foot are becoming a major health concern in the Kingdom of Bahrain, there are a few studies published in this field. Among the limited number of studies that can be found, is a study by Dr. Al-Mahroos which was published in Bahrain Medical Bulletin in 2006².

The aim of the study is to determine the risk factors and personal characteristics of diabetic foot patients and their impact on the socioeconomic status in Bahrain.

METHOD

This is a prospective study which included eighty seven patients with primary diagnosis of diabetic foot who were admitted in the vascular surgery unit in Salmaniya Medical Complex between March and June 2010.

All necessary data were collected upon discharging the patients. A specific modulated questionnaire was designed for the study.

RESULT

Eighty-seven patients were admitted with diabetic/ischemic foot. Among the 87 patients complaining of diabetic foot, 17 (20%) were non-Bahraini, mainly from the Indian subcontinent. Sixty (69%) patients were males, 68 (78%) were diagnosed as first presentation of diabetic foot. Sixty (69%) diagnosed with neuropathic foot, 35 (40%) patients had diabetes mellitus for less than 10 years and 61 (70%) of patients had HbA1c more than 7. Most patients stayed almost a month in the hospital, see table 1.

Table 1: Personal Characteristics of Patients and Results

Variables	Number and Percentage
Non Bahraini	17 (20%)
Bahraini	70 (80%)
Male	60 (69%)
Female	27 (31%)
New cases	68 (78%)
Old cases	19 (22%)
Neuropathic foot	60 (69%)
Ischemic foot	27 (31%)
Diabetes More than 10 years	52 (60%)
Diabetes Less than 10 years	35 (40%)

HbA1c more than 7	61 (70%)
HbA1c equal or less than 7	26 (30%)
1 to 10 days stay	33 (37%)
11 to 30 days stay	44 (50%)
More than 30 days stay	10 (11.5%)

Amputations were done in 22 (25%) patients, 5 (5.5%) of which underwent major amputation (above or below knee amputation), see figures 1 and 2.

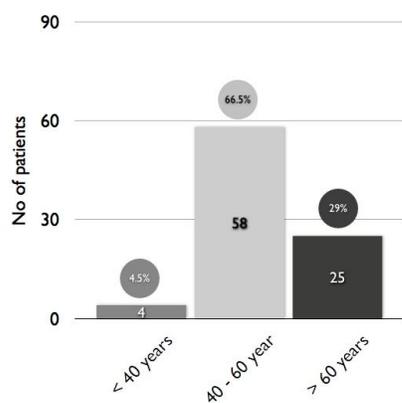


Figure 1: Age Distribution of Patients with Diabetic Foot

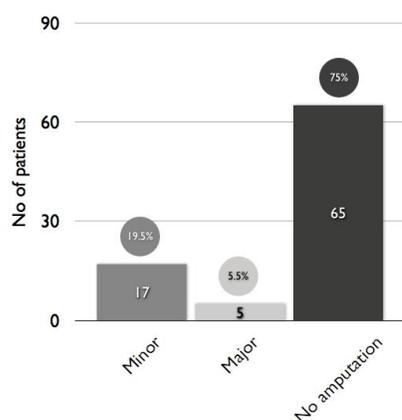


Figure 2: Type of Amputation

DISCUSSION

This study illustrates that eighty-seven patients were admitted between March and June 2010 with a primary diagnosis of diabetic foot. Twenty percent of those studied were non-Bahrainis, 69% were men, most probably attributed to the nature of their work.

An alarming figure is that 78% were newly diagnosed as diabetic foot patients, which indicates the high incidence of this problem in Bahrain.

This might be attributed to the high incidence of diabetes mellitus in Bahrain, which is among the top ten in the prevalence of diabetes mellitus between 20 to 79 years (19.9%) as estimated by the International Diabetes Federation for the period between 2011 and 2030³. Dr. Al-Mahroos showed that the prevalence rate of diabetes mellitus in Bahrain has reached up to 30%⁴. In addition, it was revealed that many patients had poor glycemic control and poor education of foot care.

In our study, we have found that the majority (69%) of the diabetic foot patients had neuropathic wounds and this correlates with most of the international and regional studies; a study by Probal et al showed that 45% of diabetic foot patients ended with neuropathic ulcers and 16% had neuro-ischemic ulcers⁵. Another study by Al-Hussein et al supports our finding that neuropathic wounds were the most frequent types of wounds found in patients (72%)⁶. Foot ulcers are more likely to be of neuropathic origin⁷. On the contrary, Al Mahroos study had shown that diabetic neuropathy was present in 36% of Bahraini diabetic patients².

Amputation of the lower limb is one of the most detrimental outcomes of diabetes mellitus. It has been calculated that in every 20 seconds, a limb is lost in our world as a result of diabetes, a majority of these amputations are preceded by an ulcer, only two-thirds of them heal and the rest end up with minor or major amputation⁸.

In our study, we have found that 25% of patients had undergone lower limb amputations of which 5.5% were major and 19.5% were minor ones. This corresponds to a study from Iran where 28% of patients had undergone lower-limb amputations, a third of which were classified as major⁹. This observation was also in conformity with the EURODIALE study; a prospective cohort study of 1,088 diabetic foot ulcer patients across 14 centers in Europe; 5% had major amputations while 17% had minor ones¹⁰.

One should never ignore the psychological aspects and inconvenience experienced by those disabled patients including the impact on the level of function in society and family.

In this study, half of the patients stayed between eleven and thirty days with an average cost of 275 USD per day according to information obtained from the financial resources of the hospital.

We believe that this study has revealed alarming figures which caused financial burden to the Ministry of Health in Bahrain, as well as socioeconomic burden to the community of Bahrain.

CONCLUSION

Diabetic foot in Bahrain is a common and serious complication of diabetes mellitus; it mainly affects young males in the productive age group.

Patients with diabetic foot were becoming an increasing burden to the health services in Bahrain as well as to the Bahraini community.

A national agenda is needed to find reliable solutions to overcome this rapidly spreading disease.

A particular challenge is those patients with an ischemic element, in which the majority have non-reconstructable vascular lesions.

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