



A Study of Diabetic Foot Ulcers

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ABSTRACT

With the projected 14% prevalence rate of Diabetes Mellitus in Indian population and about 5-10% of them developing foot infections and associated foot lesions, it becomes imminent for the health care system to put in practice a logistically feasible management strategy for Diabetic foot in Tertiary Hospitals.

AIM : 1. To analyze the clinical pattern of foot ulcers in Diabetic patients. 2. To analyze the effect of glycemic status in controlling infections. 3. To analyze the risk factors leading to complications in Diabetic foot infections. 4. To assess the morbidity following

KEY WORDS : Diabetic foot, Ulcers, Glycemic status, Complications

Introduction

Diabetes mellitus is a chronic metabolic disorder; the incidence of Diabetes mellitus is increasing globally. India is emerging as the epicenter of diabetes today with prevalence rate of 14% in the population. Patient with diabetes have a 12-25% lifetime risk of developing a foot ulcer. Foot ulcers [1] have become a major and increasingly public

health problem; the morbidities, impairment of the quality of life of patients and the implied costs of the management have attracted the attention of health policy providers. In spite of their rising importance, the management [2-4] provided for ulcers are often inadequate, resulting in delayed healing and eventually the possibilities of amputation. It is projected that developing countries will experience the greater rise in the prevalence of type 2 diabetes in the next twenty years. The people living in these countries, therefore, could expect greater risks of foot ulceration.

Materials and Methods

This is a prospective study of consecutive Diabetic patients with foot complications admitted in surgical wards of Sree Balaji Medical College and Hospital, Chennai

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during the period of June 2011 to June 2013. A total of 200 cases were analyzed during this period.

Detailed history and thorough clinical examination was done in all cases. Documentation was done using a stratified proforma which included demographic data of the patients studied.

For all patients, hematological, biochemical, microbiological and radiological investigations were carried out as standard procedures. Blood sugars and Renal parameters were performed at the time of admission. Fasting, Post prandial, Pre dinner, Post dinner blood sugar was done on the next day and repeated according to blood sugar levels. Urine analysis including Urine acetone was done. X-ray of local part, ultrasonogram abdomen and Hand held Doppler study of both limbs was done. As duplex scan could not be made available for all patients, it was done for patients who were suspected to have Arteriopathy.

Observations

Age and Sex distribution

Peak incidence of diabetic foot was seen in the age group of 60-69 years. Increased prevalence was seen among males [69%]. In males increased prevalence was seen in the age group of 50-59 years and in female group 60-69 years.

Duration of symptoms before admission

Only less than 15% [30] of patients reported within a week, while 25% [50] in 7-14 days and 60% [120] in more than 15 days. Reasons attributed for delayed reporting were less severely felt by patients due to neuropathy or due to seeking native treatment or due to socio economic status.

Family history of Diabetes

There was significant family history of diabetes mellitus in 67.5% [135] of patients.

Duration of Diabetes before the development of foot lesions

In this study that 81% of the foot lesions had occurred in patients who had Diabetes mellitus of for more than 1-10 years, and 15% [30] detection at the time of admission.

Precipitating causes

Foot lesions developed spontaneously in 30% [60] and in trauma 70% [140]. Most of the neuropathic patients would have not noticed or felt the trauma.

Foot wear use among diabetic foot patients

60% of patients reported to walk bare foot, 35% wear slippers or chappals and 5% wear shoes.

Blood sugar values on admission

The analysis showed that about 52.5% of patients had uncontrolled Random Blood Sugar levels on admission in range of 201-300mg/dl.

Presence of Ketoacidosis in patients presenting with Diabetic foot lesions

About 21.5% [43] of patients presenting with Diabetic foot lesions had Diabetic ketoacidosis.

Clinical pattern of presentation of Diabetic foot lesions

About 55% [110] of patients presented with foot ulcers, 23% [46] with cellulitis, 19.5% with gangrene, 2% with abscess and 0.5% with joint involvement.

Assessment of Bony Involvement

15% [30] of patients with Diabetic foot lesions had bone involvement either in the form of osteomyelitis, pathological fracture, small joint involvement or other bony changes.

Management strategy of Diabetic foot lesions

Antibiotic only in 24 cases, Incision and Drainage in 4 cases, Fasciotomy in 19 cases, slough excision in 102 cases, slough excision with SSG in 24 cases, Toe disarticulation in 22 and Amputations in 13 cases done.

Either a single modality or combined modality of treatment was given for effective management. Antibiotics was given to all these patients.

Duration of Hospitalization

The average number of days of hospitalization was 27 days .Maximum duration was 168 days, complete recovery was seen in 93.5% of patients. 13 cases expired or went home against medical advice or got absconded in middle of treatment.

Results

In our study it is found that elderly individuals (60-69) are found to be suffering from diabetic foot ulcers and usually they occur following trauma. Wagners Grade 2 ulcers are seen commonly. Overall chances of Local or major amputation was about 60%. Infection with a single gram positive organism is commonly found in our study. Good glycemic control and proper foot care helps in the treatment of diabetic foot ulcers.

Discussion

In our study, 200 cases of Diabetic foot, maximum rate of 30.5% was seen in 60-69years age group, while it was 25% and 21% in the 50-59 and 40-49 years age groups respectively.

Causes of Diabetic foot

In our study most common cause of Diabetic foot was trauma in 70% and remaining as complications of their diabetic status.

Diabetic Foot Lesions

In Wagners Grade 2 through 5, the overall chance of local or major amputation is estimated to be around 60%. In our study ulcer pattern ranged from 94% in Grade 2, 20% in Grade 3, 36% in Grade 4 and 3% in Grade 5 category. In earlier studies ,Treece et el from city Hospital,UK in their study of 389 diabetic ulcer patients,78.4% had of Grade 2 type,10.8% had Grade 3 type and rest Grade 4.Hasbum et al from Mexico Hospital have also reported 23% of Grade 2,21% of Grade 3.Our study observation is similar to these studies.

Infections

The pattern of infection as observed in the present study reveals that while 73% of cases were infected with single infection of gram positive organism, 18% of cases had poly microbial infections.

Chronic ulcers are frequently co-existing with fungal infections of the foot and it has been said that bacterial infection could be predisposed by fungal infections. Lee et al in 2003 from Korea is a study of 13,271 patients with Diabetes have shown that 78.4% have Fungal infection of the feet. The investigators therefore, considered fungal infection is a risk factor for foot ulcer.

Despite much efforts towards the treatment of Diabetic foot ulcers, the incidence of lower extremity amputation rate remains about the same. Amputation of the toe with non-healing ulcers or gangrene can sometimes be the only solution towards limb salvage. The statistics from General Hospital in Hong Kong indicated that in ten year period from

1995–2005, 154 of 851 patients admitted with diabetic foot ulcer underwent major lower limb amputations. Our study showed 22 [11%] toe disarticulation and 13 cases of Ray, Forefoot, below and above knee amputations done. Lower rate of 2.4% amputation was reported by Jeffcoate et al [5] from UK, City Hospital among 370 patients treated by them which is similar to our observation.

Conclusion

The present study concludes that adequate glycemic control, appropriate antibiotic therapy and prompt slough excision-mediated debridement therapy can be the successful in limb salvage program as shown in nearly 93.5% of Diabetic foot cases.

Hence, proper education regarding the dietary habits, glycemic control, foot care, periodical examination and early diagnosis of the diabetic complications is mandatory in preventive practices in limb salvage program.

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