

An Experience of Diabetic Foot in Kingdom of Saudi Arabia

SYED MOHAMMAD SALEEM¹, AWAJI AL NAEEMI², MIRZA KHAN TAREEN³

ABSTRACT

Background: Diabetes mellitus is a common metabolic disease all over the world and starts very innocently and progress very vigorously. It effects every part of the body, but adversely target the feet. Like the disease itself the feet problem also starts with small innocent ulcer and progress to lethal gangrene that ends either with amputation, septicemia or death.

Aim: To search for avoidable factors in diabetic foot ulcer patients.

Methods: This prospective observational study was conducted at Sabiya General hospital, Kingdom of Saudi Arabia, in the emergency room directly Or referred into the Diabetic Clinic, from 2011-2012. Patients having previous amputation, marioloine ulcer and established gangrene were excluded from the study.

Results: Out of 129 patients, 119 patients had significant involvement of fore foot and mid foot was observed, in the study period. 10 Patients were excluded from the study. Patient had history of ulcer more than 4 weeks before consultation. 102 (79%) patients changed their foot wear while 17 patients not. The foot wear changed group got significant earlier healing in 4-8 weeks time, as compare to those patients who resist change their foot wear.

Conclusion: Simple change of local customizes sandal foot wear use, expedites healing of foot ulcer, and may even avoid of recurrence of foot ulcer. Added factor in diabetic foot ulcer is locally used sandal in diabetic patients. Illiteracy adds in poor foot care and wear which is one of the most important causes of diabetic foot ulcer and requires concern for quality, type and size adjustments.

Keywords: Diabetic foot, Foot wear, Diabetic foot ulcer

INTRODUCTION

Diabetes Mellitus is one of the most common metabolic disorders of the world and is persistently increasing. Currently 120 million people in the world are suffering from diabetes mellitus and by year 2025 the number will increase to 250 million.¹In the Arab world, the prevalence of diabetes had doubled and in some countries had dramatically tripled in the last decade only^{2,3}. In fact every 20second a lower limb is lost as a consequence of diabetes⁴, while in Makkah, Saudi Arabia. 86% foot loss was due to diabetes with Peripheral neuropathy, and circulatory disorder⁵.

The prevalence of diabetic foot observed, In Saudi Arabia, was 13.5% of the diabetic patients referred to the nephrology clinic⁶. Generally 2.5% of diabetic patients develop sever Diabetic foot (DF) each year, and 15% of them develop DF during their life.⁷ There are many factors which directly or indirectly lead to diabetic foot ulcer like Habitat, level of education, special foot wear etc⁸.

Diabetic foot syndrome refers to foot infection, ulceration, or destruction of the deep tissues associated with neurological abnormalities, infection or both and various degrees of peripheral vascular

insufficiency⁹. 2/3 of diabetic foot patients have neuropathy leads to numbness and deformity and 1/3 has vascular disease leading to ischaemia¹. Poorly fitted and unprotected footwear can disrupt the biomechanics of the foot and ankle¹⁰ that leads to ulcer formation. In addition many other factors are also associated with diabetic foot ulcer. That is longer duration of the disease, earlier age of the onset of diabetes, higher ESR, presence of peripheral neuropathy, peripheral vascular disease, nephropathy, ischemic heart disease, and hypertension⁸. However, low level of education of patients is one of the main reasons of in-appropriate use of their foot wear⁴ which leads to diabetic foot ulcer. Other factors like age older than 40 years, type 2 diabetes, are additional contributory factors. As diabetes diagnosed patients are generally scared from foot amputation. However the majority of the lesions can be cured by the simplest techniques of education and care. Therefore identification of preventable causes if any is fundamental for the management of diabetic foot.

PATIENTS AND METHODS

Every walking patient suffering from diabetic foot ulcer, fulfilling study criteria, the Patients were consented for study coming to Sabiya General hospital, Kingdom Of Saudi Arabia, either in the emergency room, Diabetic clinic directly or referred

¹Department of General Surgery, Bolan Medical College Quetta,

²Sabiya General Hospital, Jizan, Kingdom of Saudi Arabia,

³Department of Maxillofacial Surgery, Bolan Medical College Quetta

Correspondence to Dr. Muhammad Saleem, e-mail: dr.saleemagha@gmail.com

for diabetic foot management, from 2011-2012. Patients having bed ridden, established gangrene of foot, previous amputation, marioline ulcer, ischemic limb and threatened gangrene were excluded. Personnel data and part of the foot involvement were recorded. In addition to clinical assessment of limb vascularity, hand held Doppler ankle-brachial index (ABPI, and big toe pressure by pneumatic toe cuff were also done. While neural assessments of every patient were done, touch by cotton wool, pressure by monofilament, vibration by tuning fork and thermal by hot/ cold test tubes. The wound were swabbed for culture and sensitivity, probed for wound depth assessment and biopsied for histopathology, Foot wear in current use were documented. Patient were follow up with regular dressing, off loading by changing foot wear and antibiotic therapy according to culture and sensitivity report. Wound assessment done on weekly bases in diabetic clinic. Base line investigations were done in addition to x-ray feet Ap and Lateral view for all patients. Counseling for foot wear change, feet care by keeping it dry, avoiding trauma, inspection of inter digital spaces and sole, using medicated shoes, nail care, avoiding shoe wearing for long time and use of self medication. Progress of the wound healing was recorded on weekly bases.

RESULTS

Total number of patients was 129 in the study period, while 10 patients were excluded. They were between 30-80years with more incidence of ulcer was at 6th and 5th decade. 62 patients were male and 57 were female. 51 patients had diabetic history for the last 5-10 years and 50 patients had history of more than 10 years. 18 patients had history of diabetes less than five years. Their habit of different type of foot wear is shown in Table 1.. Isolated foot involvement were, as right foot 50 patients, left foot 52 patients and both foot involvement in 17 patients. The part of foot involved as fore foot 42, mid foot 46, hind foot 26 and diffuse 5 patients. Majority of patients (41) were suffering ulcer for the last 4-6 weeks, 40 patients more than 6 weeks and 5 patients less than 2 weeks. Patients who changed their foot wear during the treatment are shown Table 2, and the relationships of foot wear change with ulcer healing are shown in Table 3. As a whole the healing time is shown in Table4. The out come was as 111(86%) healed, 5 (3.9%) were amputated and 3(2.3%) patient deferred. 102 patient change feet wear 79.1%. 17(13.2%) patient not change, healing time in 67(51.9%) patients were 6-8 weeks, in 39 patient (30.2%) 4-6 weeks. In 8 (14%) patient bone was

involve and in 111(86%) patient bone were free radiologically.

Table 1: Commonly used foot wear (n =129)

| Foot wear | No. | % |
|-----------|-----|------|
| Sandal | 92 | 71.3 |
| Others | 37 | 28.7 |

Table 2: Frequency of change of foot wear (n=129)

| Change of foot war | No. | % |
|--------------------|-----|------|
| Changed | 111 | 86.0 |
| Not changed | 18 | 14.0 |

Table 3: Ratio statistic for healing time/foot wear

| | |
|--|-------|
| Mean | 3.16 |
| Minimum | 1.50 |
| Maximum | 5.00 |
| Standard deviation | 1.01 |
| Price related differential | 1.10 |
| Coefficient of dispersion | 0.289 |
| Coefficient of variation median centered | 34.3 |

Table 4: Frequency and percentage of healing time of ulcer (n=129)

| Healing time (weeks) | No. | % |
|----------------------|-----|------|
| 2-4 | 2 | 1.5 |
| 4-6 | 48 | 37.2 |
| 6-8 | 67 | 51.9 |
| >8 | 12 | 9.4 |

DISCUSSION

Diabetic foot is a disease of middle to old age group of diabetic patients particularly who are suffering more than ten years of the disease, and its incidence increases.²⁻³ It affects equally both sex with out any difference between the limbs and the sex. However fore foot and mid foot is more involved as compare to hind foot.⁴ Patient suffering insensate foot gets more complication than normal¹⁰. It could be because of deformed foot, insensate the injury of ill fitted shoes. Any foot which has established gangrene and involved bone either exposed or osteomylitic, ends up with amputation¹¹⁻¹². Foot ulcer patients reported in average 4 weeks time and majority of our patient were wearing classical foot wear.¹³ The ulcer site co inside with pressure point of foot wears classically at the strip of the shoes. Others had ulcer on exposed unprotected site. Majority of patient easily convinced to change such foot wear and got excellent ulcer healing effect which is simple avoiding of predisposing factor^{14,15}. It is considered as off loading which has established role in healing. Medicated shoes for diabetic patient are extraordinary solution.

CONCLUSION

Added factor in diabetic foot ulcer is locally used sandal in diabetic patients. Illiteracy adds in poor foot care and wear which is one of the most important causes of diabetic foot ulcer and requires concern for quality, type and size adjustments

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