

MANAGEMENT OF DIABETIC FOOT ULCERS: SOME BITTER FACTS AND HARSH REALITIES

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During one of the annual conferences of Diabetic Association of Pakistan (DAP) Karachi in the early 90s, on the occasion of World Diabetes Day, it was pointed out that diabetic foot is not a problem in Pakistan. The reason forwarded was that since Muslims wash hands and feet atleast five times a day before offering the prayers, it ensures good foot care, hence it prevents any foot ulcers. However, the reality was contrary to it. Soon thereafter, we learnt of several cases of foot ulcers in Lahore, both in medical and surgical wards of Mayo hospital as shown by Prof. Mahmood Ali Malik a noted diabetologist. It highlighted the fact that diabetic foot is very much a problem in Pakistan as well. Subsequently several cases of foot ulcer were also observed in Karachi at Jinnah Postgraduate Medical Centre (JPMC) and other hospitals, negating the earlier assumptions of DAP about the absence of the problem in the country. The fact is that these patients do not necessarily come to diabetes centers and instead present themselves to the medical, surgical or orthopaedic units of various hospitals.

Until few years ago, there was no healthcare facility in Pakistan which offered comprehensive care to the diabetics under one roof. Private sector has now taken the lead as Baqai Medical University in Karachi established Baqai Institute of Diabetology and Endocrinol-

ogy (BIDE) the first such center in Pakistan offering most comprehensive diabetic care by multidisciplinary team. BIDE has a proper Diabetic Foot Clinic. Dow University of Health Sciences has also now established an Institute of Diabetes and Endocrinology at Ojha Campus which has a Diabetic Foot Clinic. This also happens to be the first such centre in public sector. JPMC in Karachi, Mayo Hospital and Services Hospital in Lahore also have diabetic centers which offer treatment for diabetic foot ulcers. Diabetes and Endocrine Foundation at JPMC and many other NGOs are also running diabetes clinics.

Diabetologists started recognizing diabetic foot problems in UK in 1980 and in other European countries including Holland in 1990. This group later became known as International Working Group on Diabetic Foot (IWGDF). It is affiliated with International Diabetes Federation (IDF) and has been quite active for the last ten years.¹

In its meeting in UK in 1996, this group formulated practical guidelines on management of diabetic foot which has been translated in many languages. It has representatives from eighty four countries and surprisingly until February 2006, Pakistan was not represented in this group. It was during the BIDE's international diabetics conference at Karachi that Prof. Abdul Basit Director of BIDE was invited to become a member and represent Pakistan. Realizing the importance of diabetic foot problems, IDF also chose the theme of World Diabetes Day in 2005 "Put Feet First, Prevent Amputations".

In Pakistan in the absence of any Diabetic Foot Clinics patients with diabetic foot ulcers visiting healthcare facilities are shunted from medical to surgical and orthopaedic wards

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with no body willing to own them. Hence, they continue to suffer from this “*shunting phenomenon*”. Foot disease is considered to be one of the most common complications of diabetes mellitus and diabetic foot refers to a wide spectrum of disease. About 20-40% of diabetics are reported to have neuropathy of which almost 50% are likely to develop symptomatic peripheral vascular disease within twenty years of diagnosis. The lifetime prevalence of foot ulceration is about 15% while diabetes is an important non-traumatic cause of major amputations of the lower limbs.² Basit et al. studied 2199 Type-II diabetics which showed that the prevalence of diabetic foot ulcers was 10.4% and it was higher among the males.³ Diabetic foot ulcers are contributed by sensory, motor and autonomic neuropathy due to ischemia and infections. These ulcers then tend to acquire a polymicrobial infection including Gram-positive and Gram-negative bacteria besides anaerobic strains.⁴

Burden of diabetic foot: The true incidence regarding prevalence of diabetes in Pakistan is reported to be between 5-7%,⁵ although some estimates suggest that we may have over six million diabetics. Taking into account that the incidence of foot ulcer is 10% as per studies by Basit et al.⁶ we have over four lac and twenty thousand people with diabetic foot ulcers. Amputation mortality is stated to be 30% within one year and it increases to 50% in three years and 70% after five years. As regards the economic burden, direct cost of treatment is about Rs. 3,433/- in University of Texas Classification System (UT) Grade IB which increased to Rs. 34,495/- in UT Grade 3D.⁶ Hence direct cost of treating one hundred ulcers will be Rs. 2.36 million rupees. Shera et al⁷ reported prevalence of chronic complications at 4% while Basit et al. report 10%.⁶ Hence even if one takes the overall prevalence of chronic complications at 7%, the direct cost of treatment of these 4, 20,000 foot ulcers will be Rs. 9.91 billions which we can ill afford. Hence the solution is early identification and treatment of diabetic foot ulcers which will go a long way in improving clinical and economic

outcome. This calls for prevention of diabetes, its complications, prevention of foot ulcers and prevention of amputations. According to Prof. Karel Bakker Chairman of IWGDF only 14% of doctors treating diabetics ask patients to take off the shoes to examine feet. Diabetic foot management requires multidisciplinary team which consists of diabetologists, vascular and orthopaedic surgeons, rehabilitation specialists, nurses and chiropodist. The first Diabetic Foot Clinic in Netherlands was established in 1987 and now every hospital having facilities for procedures has a foot care team. Impressed with their performance, IDF wrote in Diabetes Care in 2004 that “Netherlands as a Nation got the number of amputations reduced by 34% which is quite impressive”.¹ By just having diabetic foot clinics, they were able to reduce admission days from forty nine to twenty days per patient per admission and overall 50% reduction in patients. Brazil started in 1992 and now they have sixty two Diabetic Foot Clinics.

Foot Examination: Foot care is affordable and one only needs to use hand, eyesight, simple hammer, vibrating tuning fork and commonsense. This can detect 85% of insensitive feet. Un-necessary swabs and blood culture are not needed in almost 90% of cases unless the patient is toxic, hospitalized with non-healing ulcers. Cardiac, renal and hepatic assessment should be worked out. Full blood count and X-ray of foot is ideal otherwise X-ray is only required in longstanding ulcers. Nurses and paramedics can be trained to do foot examination.

Management strategies: Proper monitoring and selfcare are considered key aspects of management. The management strategies include good glycemic and blood pressure control, improving lipid profile, cessation of smoking besides Aspirin or any other antiplatelet therapy. Other strategies include use of antibiotics, podiatry, off loading devices and surgical management. Deep wound swab most often shows the presence of Gram-positive and Gram-negative bacteria besides aerobic and anaerobic organisms. It is advisable to treat these infec-

tions promptly with a combination of antimicrobial therapy. If osteomyelitis worsens, surgery may be needed. In such cases debride the wound till it bleeds, tissues should be kept warm and moist to prevent the formation of necrotic material. Use of Pyodine is quite helpful. EUSOL which can be prepared in the healthcare facility is quite economical for dirty wounds. Specialized dressings should be used and normally there is no role for topical antibiotics in simple infections.

Different treatment modalities are being tried to treat diabetic foot ulcers using various therapeutic agents. Speaking at the Royal College of Physicians London Regional Conference held at Fatima Jinnah Medical College Lahore in March 2006, Prof. Faisal Masud presented a study in which ulcerated feet was soaked for twenty minutes in a solution of tincture iodine used in one liter of 75% ethyl alcohol. This process was repeated eight hourly and the wounds were left open without dressing. No systemic antibiotics were used. It resulted in faster and much improved wound healing within 2.83 weeks as compared to 5.8 weeks with the use of commonly prescribed broad spectrum antibiotic ofloxacin 400mg 12 hourly with daily wound dressing. However, this may be practical and feasible in case of educated hospitalized patients or those coming from cities. This procedure, however, remains to be validated. In case of rural areas where majority of the patients may not be so educated, there is a risk of infection if wounds are kept open hence it may worsen their wounds.⁸ In case of superficial or deep foot ulcers, the diabetics should be advised to consult a healthcare professional who knows about diabetic foot problems and its management.

If the wound is not healing, it could be a case of neuropathy and vascular disease. Vascular reconstruction is very expensive and time consuming. Fortunately vascular disease is low in Asia 10% as compared to 40% in the West where use of unhealthy diet with lot of fat is leading to atherosclerosis.¹ Vascular problems are responsible for big ulcers which result in amputations. Normally neuropathic ulcers

should heal in 85-90% of cases. If there is no improvement in wound healing, arteriography becomes necessary. With early drainage, debridement and local foot amputations combined with liberal use of revascularization may result in 70% limb salvage at five years in high risk groups.⁴ Amputation rate increases if the wound is stitched, hence it should be avoided. Dr. Basit and his colleagues report 21-22% amputation with finger and toes and 10% amputation above and below knee.⁶ Fortunately pure ischaemic foot ulcers are very low here in Pakistan, hence the amputation rate is also very low. This also shows that most of our amputations are preventable provided the patients and the healthcare professionals take foot care.

Off loading devices: Removing or re-distributing mechanical force from a diabetic foot is important in foot care. For this purpose various off loading devices and techniques are used. It is now considered essential in prevention and treatment of diabetic foot ulcers. One does not necessarily have to go for expensive off loading devices. BIDE has developed some modified off loading devices using simple leather or wooden slippers. It results in wound healing within four to eight weeks. However, their average duration of treatment of foot ulcers is 105.3 days. Slippers using strips between first and the second toe are dangerous. It is the place where diabetics gets ulcer, hence it should be avoided and so is the case with tight shoes. The IWGDF has now formed an International Group on Foot Wear and Off Loading which is taking care of this issue. IWGDF has also prepared CDs on Foot Care and comprehensive guidelines in the form of a booklet which are available through IDF and can be ordered on their website. (www.idf.org)

Follow-up care: If there is no sensory loss, examination of feet once a year is good enough. In case of sensory loss, examination every three to six months is necessary. However, if there is severe sensory loss and vascular disease, examination every three months is recommended. In case of healed foot ulcers, patients

must have their feet examined between one and three months.

SUGGESTIONS

Foot care advice is extremely important. This calls for educating not only the patients but also the healthcare professionals in foot care who should invariably examine the feet of these patients. The number of trained podiatrists in Pakistan is very negligible. Hence, training of podiatrist and establishing foot care clinics at major healthcare facilities and at Diabetic Centers should be initiated immediately. Keeping in view the limited number of trained and qualified diabetologists and since the prevalence of diabetes is increasing rapidly; we also need to train "Non-Physician Health Educators". They can give advice on diet and behavioral changes, identify feet at risk, measure blood glucose and offer advice on nail cutting. These simple interventions will be highly cost effective and drastically improve the diabetic foot care, reduce amputations thus improving the quality of life of these diabetics.

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Further selected readings

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