

CASE STUDY-1

Diabetic Foot Ulcer – A Case Study

Subhash Chawla, MS, FICS, FIAS

Surgical Specialist, Military Hospital, Patiala, Punjab

E-mail: s_chawla1960@yahoo.com

Key Words: NIDDM, VLDL, LDL, HbA_{1c}

Introduction:

Diabetic foot is the most dreaded complication of diabetes mellitus. Diabetic neuropathy is most disabling as it leads to increased morbidity and decreased quality of life in patients with diabetes. Failure to recognize symptoms of autonomic neuropathy may lead to secondary complications in form of diabetic foot ulcers and cardiac arrhythmias. One of the most feared complications of this disease is loss of lower limb and is a challenge to surgeons. This is most dangerous in view of sudden cardio respiratory deaths during and after surgery in diabetics. This case history demonstrates the adverse effects of diabetes on feet, and the multidisciplinary team's contribution to successful treatment and healing of a complex foot lesion. A case of Diabetes mellitus involving both feet is discussed.

Case History

Seventy eight years old patient an old case of type 2 NIDDM on irregular medical treatment was admitted with history of diabetic feet bilateral. Patient also had foul smelling discharge from left foot and had auto amputation of 2nd to 4th toe left foot due to gangrene.

On examination patient was restless. General condition was poor. Pulse 110/ minute, temp 102°F, BP 124/80 mm of

Hg. Local examination of left foot revealed gangrene of heel, sole and auto amputation of 2nd, 3rd and 4th toe. Right foot had superficial ulcers over dorsum of 2nd and 3rd toe. Distal pulsations were present.

Patient was investigated and broad spectrum antibiotics started after wound debridement and dressing. Blood sugar levels varied between fasting 151mg% to 170 mg% and post prandial up to 223 mg%. Below knee amputation was done as it was not possible to save his left foot due to extensive gangrene of sole. Reshaping of stump was done at a later date as patient developed flap necrosis. Patient was advised aerobic exercises of upper limbs, diabetic diet and oral hypoglycemic agents and has improved.

Discussion:

Diabetes can cause damage to the nerve and vascular supply in the feet and legs. Patients with neuropathy have reduced or no sensation and, therefore, might be unaware of any trauma to their feet caused by ill-fitting footwear or an object in their shoes, such as a piece of glass, a stone or a drawing pin. Continued walking on an injured foot will damage it further and minor lesions can become more serious. A simple examination of the feet, feeling inside the shoes before wearing them and not walking barefoot can help to prevent

minor injuries. Many of the patients attending the diabetes clinic are older and some cannot see feel or reach their feet, which means that they are often unaware of any injuries. Diabetic foot ulcers should be treated to maintain health status, improve quality of life and reduce the number of amputations.

A recent study by American Diabetic Association (2004) has demonstrated a consistent beneficial effect of regular physical activity training on carbohydrate metabolism and insulin sensitivity, which can be maintained for at least 5 years. These studies used physical activity regimens at an intensity of 50–80% Vo_2max three to four times a week for 30–60 min a session. Improvements in HbA1c were generally 10–20% of baseline and were most marked in patients with mild type 2 diabetes and in those who are likely to be the most insulin resistant. Many patients with type 2 diabetes have impaired fibrinolytic activity associated with elevated levels of plasminogen activator inhibitor-1 (PAI-1), the major naturally occurring inhibitor of tissue plasminogen activator (t-PA). Studies have demonstrated an association of aerobic fitness and fibrinolysis. Regular physical activity has consistently been shown to be effective in reducing levels of triglyceride-rich VLDL. However, effects of regular physical activity on levels of LDL cholesterol have not been consistently documented. Effects of physical activity on reducing blood pressure levels have been demonstrated most consistently in hyperinsulinemic subjects. Of particular interest are studies suggesting a disproportionate effect of physical activity on loss of intra-abdominal fat, the presence of which has been associated most closely with metabolic abnormalities. “Care your

feet as your face or you will bury your feet before your face”

Techniques to prevent and treat lower extremity amputation in patients with diabetes vary from simple foot inspection to complicated vascular and reconstructive surgery. Early identification of risk factors, careful and regular evaluation, and aggressive treatment in a multidisciplinary team approach prevent amputation in most cases of diabetic foot ulcer. This case history demonstrates the adverse effects of diabetes on feet. The patient had a dense neuropathy, which meant that he was unaware of the chicken bone embedded in his foot. He continued to put weight on the foot, which resulted in a minor foot injury developing into a serious health problem. Poor blood supply to his feet and legs hindered wound healing. In patients with diabetic foot problems, often a combination of factors cause the tissue to breakdown; in this case it was neuropathy, vascular disease and a minor foot lesion that became infected. All of the co-existing factors must be addressed when treating patients with diabetic foot ulcers.

References:

1. American Diabetes Association (2004) Physical Activity/Exercise and Diabetes. *Diabetes Care*, 27: S58-S62.
2. Boyko, E.J., Ahroni, J.H., Stensel, V, Forsberg, R.C., Davignon, D.R., Smith, D.G. (1999) A prospective study of risk factors for diabetic foot ulcer. *Diabetes Care*, 22:1036–1042.
3. Boulton, A.J.M. (1996) The pathogenesis of diabetic foot problems: an overview. *Diabet. Med*, 3: S12–S16.
4. Boulton, A.J.M., Malik, R.A., Arezzo, J.C., Sosenko, J.M. (2004) Diabetic Somatic Neuropathies. *Diabetes Care*, 27(6): 1458– 1486.