VARIOUS MODERN METHODS OF TREATMENT OF DIABETIC FOOT ULCERS

Essay
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By

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AGEs : Advanced glycation end products

ATP : Adenosine Tri-phosphate

CRP : C - reactive protein

EGF : Epidermal Growth Factor

ESR : Erythrocyte Sedimentation Rate

FDA : Food and Drug Administration

FGF : Fibroblast Growth Factor

GCSF **:** Granulocyte-Colony Stimulating Factor

IGFs : Insulin like Growth Factor

LEA **:** Lower extremity amputations

MIRE : Monochromatic Infrared Energy

MMP **:** Matrix Metalloproteinases.

MRI **:** Magnetic Resonance Imaging

MTPJ **:** Metatarsophalangeal Joint

NGF **:** Nerve Growth Factor

NO **:** Nitric Oxide

PDGF **:** Platelet Derived Growth Factors

PKC **:** Protein Kinase C

PTB : Patellar Tendon Bearing

SWM **:** Semmes–WeinsteinMonofilament

TCC : Total Contact Cast

TGF **:** Transforming Growth Factor

VAC : Vacuum assisted closure

VEGF **:** Vascular Endothelial Growth Factor

VPT : Vibration Perception Threshold

INTRODUCTION

Foot ulcers are a significant complication of diabetes mellitus and often precede lower-extremity amputation. The most frequent underlying etiologies are neuropathy, trauma, deformity, high plantar pressures, and peripheral arterial disease ***(Boulton, 2000).***

Diabetic neuropathy is a debilitating disorder that occurs in nearly 50% of patients with diabetes ***(American diabetes Association, 2004).***

A diabetic patient with a history of previous ulceration or amputation is at increased risk for further ulceration, infection and subsequent amputation. Alterations in foot dynamics due to ulceration, joint deformity or amputation can cause the abnormal distribution of plantar pressures and result in the formation of new ulcers ***(Bild et al.,1989).***

Peripheral arterial occlusive disease is four times more prevalent in diabetics than in non-diabetics. The arterial occlusion typically involves the tibial and peroneal arteries but spares the dorsalis pedis artery. Smoking, hypertension and hyperlipidemia commonly contribute to the increased prevalence of peripheral arterial occlusive disease in diabetics ***(Lee et al.,1993).***

Heel ulcers are a particularly difficult problem, often occurring as a consequence of heel pressure in the supine position. The ideal target to provide maximal perfusion to the heel is the posterior tibial artery. In its absence, the dorsalis pedis artery has proved to be an effective target for healing of heel ulcers ***(Berceli, 1999).***

Foot disorders such as ulceration, infection, and gangrene are the leading causes of hospitalization in patients with diabetes mellitus ***(Frykberg, 1998).***

Meticulous attention to foot care and proper management of minor foot injuries are key to preventing ulcer formation. Daily foot inspection by the patient (or a caretaker if the patient lacks sufficient visual acuity or mobility to perform the examination) is the cornerstone of proper foot care. Gentle cleansing with soap and water, followed by the application of topical moisturizers, helps to maintain healthy skin that can better resist breakdown and injury ***(Lipsky and et al., 2006).***

As Prevention is much better than therapy, treatment should begin with patient education and followed by deforming the causative factor for ulceration. The patient should be reminded to keep blood glucose under control. Debridement of all necrotic tissue plays a fundamental role in treatment Wounds that don't heal by these conventional methods may benefit from

advanced modalities such as hyperbaric treatment, growth factors, bioengineered tissue, vacuum assisted closure (VAC), biological dressings, plastic surgery, or active topical and treatment of underlying ischemia should be considered if present ***(Calhoun, 2002).***