

Hyperbaric Oxygen; Unknown Therapeutic Modality for Diabetic Foot Ulcer

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ABSTRACT

Background: Diabetes is a chronic disease. Lifestyle and demographic changes have resulted in much more diabetics with increasing morbidity and mortality. 160 years ago, Calvi and Hodgkin described the complication of diabetic foot ulcers. 25% of the diabetics will endure an ulcer in their life. Chronic wounds affect 6.5 million people of USA with 25 billion dollars of health expenditure costs. 1–2% of population in developed countries will encounter a chronic wound in their life. Diabetic foot ulcers as a common and serious complication have local and systemic, private and social consequences. 100% oxygen is prescribed at pressures greater than atmospheric pressure in hyperbaric oxygen therapy (HBOT). HBOT increases tissue oxygenation and has many medical indications.

Material and Methods: HBOT is unknown in many countries yet. Systematic review of pubmed articles has been done up to 2016.

Results: In 1992, Doctor et al from India concluded HBOT as a safe and beneficial adjuvant therapy in chronic diabetic foot ulcers. Faglia et al from Italy declared HBOT effectiveness in multidisciplinary therapeutic protocol of ischemic foot ulcers in 1996. Results of review of Goldman in 2009 showed 95% reduction in chance of amputation, and 95% improvement in chance of healing, and reduction in risk of amputation for patients with diabetic foot ulcers complicated by surgical infection. He also denoted moderate promotion in healing of arterial ulcers, and refractory vasculitic ulcers, plus low to moderate successful flaps and grafts.

Conclusion: Mechanisms and effects of treatment by hyperbaric oxygen in burns are as following: Mechanisms involved are: Increasing the concentration gradient for oxygen, reduction of bacterial load, reduction of edema, increase of angiogenesis, collagen synthesis, granulation tissue formation, epithelialization, and wound contraction. In general, HBOT causes decrease of mortality, length of

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hospital stay, number of surgeries, and cost of care. Subsequent studies demonstrated HBOT as an adjunct treatment care significantly improves morbidity and mortality, reduces length of hospital stay, and lessens the need for surgery.

Keywords: Wound, Diabetes, Hyperbaric Oxygen, Treatment, Ulcer, Healing