

Infectious diseases: pathophysiology and mechanisms of hyperbaric oxygen

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Hyperbaric oxygen (HBO) therapy has proved adjunctive along with antibiotics and surgery for the treatment of necrotizing soft tissue infections, refractory osteomyelitis, and infected ischemic wounds. The pathophysiology and mechanisms of HBO therapy explain these beneficial effects. Hyperbaric oxygen has a direct bactericidal effect on anaerobic organisms through the production of toxic oxygen radicals. Hyperbaric oxygen increases the oxygen tension in infected tissues which provides oxygen to the polymorphonuclear leukocytes to kill aerobic organisms. Hyperbaric oxygen provides oxygen to the fibroblast to allow new collagen formation and, subsequently, angiogenesis which allows hypoxic infected wounds to heal. Finally, HBO potentiates certain antibiotics such as the aminoglycosides and the sulfonamides.