

# Adjuvant Hyperbaric oxygen therapy (HBO<sub>2</sub>) for treatment of necrotizing fasciitis reduces mortality and amputation rate.

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Escobar S.J., Jr. Slade J.B., Hunt T.K., Cianci P. Adjuvant Hyperbaric oxygen therapy (HBO<sub>2</sub>) for the treatment of necrotizing fasciitis reduces mortality and amputation rate. *Undersea Hyperb Med* 2005; 32(6):437-443. Objective: A retrospective analysis of 42 patients with necrotizing soft tissue infections treated with adjunctive HBO<sub>2</sub> to ascertain efficacy and safety. Overall mortality was 11.9% and morbidity 5%. Summary Background Data: Necrotizing soft tissue infections have historically high rates of mortality and morbidity, including amputation. Common misconceptions that prevent widespread use of adjunctive HBO<sub>2</sub> for this diagnosis include delays to surgery, increased morbidity, and significant complications. Methods: Forty-two consecutive patients (average age 56.1) with necrotizing fasciitis presenting to a major referral center were treated with adjunctive HBO<sub>2</sub> as part of an aggressive program of surgery, antibiotics, and critical care. Involved areas included the lower abdomen (15 patients), thigh and perineum (9 patients), flank (4 patients), lower leg (3 patients), and arm, shoulder, and axilla (2 patients). Co-morbidities included diabetes mellitus, chronic renal failure, intravenous drug abuse, peripheral vascular disease, and malignancy. Results: Mortality was 11.9% (5 patients). Both amputations (a finger and a penis), occurred prior to transport to our facility. The average number of surgical debridements was 2.8 per patient; 1.25 performed prior to the start of HBO<sub>2</sub>. The infectious process was controlled after an average of 7 HBO<sub>2</sub> treatments were administered to ensure successful wound closure. Complications consisted of only mild ear barotrauma in 3 patients (7%), and confinement anxiety in 17 (41%) but did not prevent treatment. Conclusion: Compared to national reports of outcomes with “standard” regimens for necrotizing fasciitis, our experience with HBO<sub>2</sub>, adjunctive to comprehensive and aggressive management, demonstrates reduced mortality (34% v. 11.9%), and morbidity (amputations 50% v. 0%). The treatments were safe and no delays to surgery or interference with standard therapy could be attributed to HBO<sub>2</sub>.

## INTRODUCTION

Necrotizing soft tissue infections encompass several previously named disease processes, including necrotizing fasciitis, Fournier’s gangrene, necrotizing myositis (nonclostridial), and necrotizing cellulitis. There are approximately 1000 cases reported in the United States annually, making this a relatively rare disorder. The infections are usually polymicrobial and spread along subdermal fascial planes. Thrombosis of

nutrient arteries to the skin may occur, thus producing areas of focal necrosis. The destruction of tissue is through liquefactive necrosis, which occurs as a result of many toxins, including hyaluronidase and lipase produced by the invading bacteria. “Walling off” of the infection by an inflammatory reaction does not occur. Clinically, these infections are marked by excruciating pain and the absence of clear local boundaries, and the visible degree