

Results of Chronic Osteomyelitis of the Femur Treated with Hyperbaric Oxygen: A Preliminary Report

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Background: Although only a few studies have shown the effectiveness, hyperbaric oxygen (HBO) therapy has been used as an adjunct in the management of chronic osteomyelitis in many hospitals in Taiwan. This retrospective study investigated the clinical results of HBO therapy for chronic refractory osteomyelitis of the femur.

Methods: From December 1999 through May 2002, 13 patients with chronic refractory osteomyelitis of the femur were treated with adjunctive HBO. The most common infecting microorganism was *Staphylococcus aureus*. All cases were classified as type III or IV osteomyelitis according to the Cierny-Mader classification. Adequate surgical debridement and parenteral antibiotic treatment were performed. The average number of operations before HBO therapy was 4.6 times. HBO therapy at 2.5 atmospheres absolute for 120 minutes was administered for 5 days per week in all patients for an average of 50 days. The average number of HBO treatments was 32.2 times. The average follow-up period was 22 months, ranging from 12 to 42 months.

Results: Complete eradication of infection with no recurrence of infection was noted in 12 of the 13 patients. One patient failed to respond to the treatment. The success rate of the treatment regimen was 92%. There were no HBO therapy related complications.

Conclusion: Hyperbaric oxygen therapy is an effective and safe adjunctive therapy for the management of chronic refractory osteomyelitis of the femur provided that patients had received adequate surgical debridement and appropriate antibiotic treatment.

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Key words: hyperbaric oxygen, chronic refractory osteomyelitis, atmosphere absolute.

The goals of treatment for chronic osteomyelitis are to eradicate the infection and maintain optimum physiologic function of the affected area. This imposes a challenge to orthopedic surgeons because of the high recurrence rate, expensive medical costs, and prolonged disability. Adequate surgical debridement, antibiotic treatment, and soft tissue reconstruction are the mainstay for treatment.^(1,2) However,

optimal results are not always achievable. The recurrence rate was reported as high as 20 to 30% even with aggressive medical and surgical treatment.^(2,3) One study from Mayo Clinic in 1983, reported an extraordinarily high recurrence of 61.5% with mixed aerobic and anaerobic osteomyelitis.⁽³⁾

Hyperbaric oxygen (HBO) therapy has been used for chronic refractory osteomyelitis since

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