

RESEARCH ARTICLE

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Can hyperbaric oxygen be used to prevent deep infections in neuro-muscular scoliosis surgery?

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Abstract

Background: The prevalence of postoperative wound infection in patients with neuromuscular scoliosis surgery is significantly higher than that in patients with other spinal surgery. Hyperbaric oxygen has been used as a supplement to treat postsurgical infections. Our aim was to determine beneficiary effects of hyperbaric oxygen treatment in terms of prevention of postoperative deep infection in this specific group of patients in a retrospective study.

Methods: Forty two neuromuscular scoliosis cases, operated between 2006–2011 were retrospectively reviewed. Patients who had presence of scoliosis and/or kyphosis in addition to cerebral palsy or myelomeningocele, postoperative follow-up >1 year and posterior only surgery were the subjects of this study. Eighteen patients formed the Hyperbaric oxygen prophylaxis (P-HBO) group and 24, the control group. The P-HBO group received 30 sessions of HBO and standard antibiotic prophylaxis postoperative, and the control group (received standard antibiotic prophylaxis).

Results: In the P-HBO group of 18 patients, the etiology was cerebral palsy in 13 and myelomeningocele in 5 cases with a mean age of 16.7 (11–27 yrs). The average follow-up was 20.4 months (12–36mo). The etiology of patients in the control group was cerebral palsy in 17, and myelomeningocele in 7 cases. The average age was 15.3 years (8–32 yrs). The average follow-up was 38.7 months (18–66mo). The overall incidence of infection in the whole study group was 11.9% (5/42). The infection rate in the P-HBO and the control group were 5.5% (1/18), and 16.6% (4/24) respectively. The use of HBO was found to significantly decrease the incidence of postoperative infections in neuromuscular scoliosis patients.

Conclusion: In this study we found that hyperbaric oxygen has a possibility to reduce the rate of post-surgical deep infections in complex spine deformity in high risk neuromuscular patients.

Keywords: Neuromuscular scoliosis, Infection, Treatment, Hyperbaric oxygen

Background

The prevalence of postoperative wound infection after scoliosis surgery is significantly higher in neuromuscular scoliosis patients when compared to other types of scoliosis [1]. It may also compromise the correction obtained by surgery, especially in cases in which hardware removal is necessary. There are various factors that may contribute to the increased risk for postoperative wound infections in patients with neuromuscular disease. Severe neurologic involvement, a diagnosis of myelodysplasia,

the use of allograft bone, preoperative malnutrition, urinary tract infection, and excessive blood loss have all been identified as potential risk factors [1-3].

Hyperbaric oxygen (HBO) has been reported to heal postoperative spinal infections in adults with intact osteosynthesis material [4]. HBO therapy increases oxygen tension in tissues, including bone, with increased bone-turnover and increased bone-metal contact [5].

The purpose of this retrospective study was to compare and evaluate the infection rate of neuromuscular scoliosis patients undergoing instrumented only-posterior spinal fusion who were treated with or without early postoperative prophylactic administration of HBO (P-HBO). We hypothesized that the use of hyperbaric oxygen in addition

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