

RESEARCH ARTICLE

Effect of mild hyperbaric oxygen therapy on children diagnosed with autism

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ABSTRACT

Introduction: Hyperbaric oxygen (HBO₂) therapy is emerging internationally as the primary treatment modality for inflammatory pathways related to neurological disorders. Currently, literature concerning its effectiveness in autistic children is limited. Using neurocognitive tests and clinical-diagnostic evaluations, this study evaluates the clinical, cognitive and behavioral effects of HBO₂ on children diagnosed with autism.

Methods: An experimental HBO₂ group (EXP: F = 1; M = 7; mean age: 7 ± 2.33; years) and a control non-HBO₂ group of autistic children (CTRL: F = 2; M = 5; mean age: 6.6 ± 2.7 years) correctly completed the Aberrant Behavior Checklist-Community (ABC) before HBO₂ (T₀), after 40 sessions of HBO₂ (T₁), and one month after the end of treatments (T₂). Additionally, the experimental HBO₂ group was evaluated with the Childhood Autism Rating Scale at T₀ and T₂.

Results: Total ABC score was lower at T₂ (mean ± SD: 50.38 ± 18.55; p < 0.001) compared to scores obtained at T₀ (mean ± SD: 57.5 ± 19.01). Similarly, in the control group the total ABC score differed statistically (p < 0.05) between T₀ (103.6 ± 20.38) and (T₂: 59 ± 25.25).

Conclusions: Despite the improvements reported in both groups, our results do not support the utility of HBO₂ in children diagnosed with autism.

INTRODUCTION

Autism (AD) is a neurodevelopmental disorder characterized by impaired social interaction and communication that presents with narrow and stereotyped patterns of behaviors. Although the estimated rate of AD in the United States is one per 100 people [1], previous epidemiologic studies have implied that the prevalence of the pathology is increasing [2,3]. Annual treatment costs of AD within the United States exceed several billion dollars [4]. With autism rates increasing and costs on the rise, better and cheaper treatments are continually being developed.

Hyperbaric oxygen (HBO₂) therapy is an emerging treatment modality for inflammatory pathways related to AD [15,16]. According to the Undersea and Hyperbaric Medical Society (UHMS), HBO₂ is defined as an intervention that utilizes 100% patient-inspired oxygen inside a chamber pressurized to greater than 1.4 atmospheres absolute (ATA). These environmental conditions increase the partial pressure of oxygen (PPO₂) and dissolved oxygen in plasma, increasing the oxygenation of body tissues [17].

To date the UHMS has determined the beneficial effect of HBO₂ for 14 different diseases [18]. An increasing number of studies are reporting that HBO₂ improves neurological function. In particular, Jacobs, et al. demonstrated significant and persistent gains of cognitive function and memory in a group of people with cognitive deficit receiving HBO₂ at 100% and 2.5 ATA after 30 intermittent sessions [19]. Additionally, a double-blind randomized controlled trial showed that even young healthy adults treated for seven weeks

KEYWORDS: autism; children; hyperbaric oxygen therapy; psychology