

Cerebral Palsy

Collet, Jean-Paul; Vanasse, Michael; Marios, Pierre; Amar, Maxime; et. al. "Hyperbaric Oxygen for Children with Cerebral Palsy: A Randomised Multicentre Trial." *The Lancet*, Vol 357, February 24, 2001.pp. 582-586

Abstract: A randomized trial to assess the efficacy of hyperbaric therapy for children with cerebral palsy was conducted using 111 children ages 3-13 years. They were randomly assigned hyperbaric oxygen or milder pressure ambient air. Both groups improved over the course of the study without any difference between the two treatments.

Hardy P, Collet JP, Goldberg J, Ducruet T, Vanasse M, Lambert J, Marois P, Amar M, Montgomery DL, Lecomte JM, Johnston KM, Lassonde M. "Neuropsychological effects of hyperbaric oxygen therapy in cerebral palsy." *Groupe de Recherche en Neuropsychologie Experimentale, Universite de Montreal, Quebec, Canada.*

Abstract: We conducted a double-blind placebo study to investigate the claim that hyperbaric oxygen treatment (HBO2) improves the cognitive status of children with cerebral palsy (CP). Of 111 children diagnosed with CP (aged 4 to 12 years), only 75 were suitable for neuropsychological testing, assessing attention, working memory, processing speed, and psychosocial functioning. The children received 40 sessions of HBO2 or sham treatment over a 2-month period. Children in the active treatment group were exposed for 1 hour to 100% oxygen at 1.75 atmospheres absolute (ATA), whereas those in the sham group received only air at 1.3 ATA. Children in both groups showed better self-control and significant improvements in auditory attention and visual working memory compared with the baseline. However, no statistical difference was found between the two treatments. Furthermore, the sham group improved significantly on eight dimensions of the Conners' Parent Rating Scale, whereas the active treatment group improved only on one dimension. Most of these positive changes persisted for 3 months. No improvements were observed in either group for verbal span, visual attention, or processing speed.

Montgomery D, Goldberg J, Amar M, Lacroix V, Lecomte J, Lambert J, Vanasse M, Marois P. *McGill University, Hospital Sainte-Justine, Montreal, Quebec, Canada.*

Abstract: Hyperbaric oxygen (HBO2) therapy for children with cerebral palsy (CP) is not new. Research documenting the effects in this population has been anecdotal. We evaluated the effects of HBO2 therapy for 25 children ($X = 5.6 \pm 1.6$ yr) with a functional diagnosis of spastic diplegic CP. Pre- and post-HBO2 evaluations consisted of the following measures: gross motor function measure (GMFM), fine motor function (Jebsen test for hand function), spasticity (modified Ashworth scale), video analysis, and parental questionnaire. The protocol for HBO2 therapy was 20 treatments of 95% oxygen at 1.75 atm abs for 60 min. The Wilcoxon matched-pairs signed-rank test for non-parametric measures was used to compare pre- and post-treatment data. Results showed improved gross motor function in three of the five items in the GMFM test, improved fine motor function in three of the six hand tests, reduced spasticity in three of four muscle groups when assessed by a physician specializing in CP, and improvements for four of nine questions posed to parents.

Neubauer, R. A. MD. Cerebral Palsy and the Brain Injured Child. Pp. 1-6.

Abstract: Case reports showing dramatic improvement in functional brain imaging paralleling clinical improvement. These results are representative of the 228 patients that have now been treated at the Ocean Hyperbaric Center.