












Hyperbaric treatment for children with autism: a multicenter, randomized, double-blind, controlled trial

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Background

Several uncontrolled studies of hyperbaric treatment in children with autism have reported clinical improvements; however, this treatment has not been evaluated to date with a controlled study. We performed a multicenter, randomized, double-blind, controlled trial to assess the efficacy of hyperbaric treatment in children with autism.

Methods

62 children with autism recruited from 6 centers, ages 2-7 years (mean 4.92+/-1.21), were randomly assigned to 40 hourly treatments of either hyperbaric treatment at 1.3 atmosphere (atm) and 24% oxygen ("treatment group", n=33) or slightly pressurized room air at 1.03 atm and 21% oxygen ("control group", n=29). Outcome measures included Clinical Global Impression (CGI) scale, Aberrant Behavior Checklist (ABC), and Autism Treatment Evaluation Checklist (ATEC).

Results

After 40 sessions, mean physician CGI scores significantly improved in the treatment group compared to controls in overall functioning (p=0.0008), receptive language (p<0.0001), social interaction (p=0.0473), and eye contact (p=0.0102); 9/30 children (30%) in the treatment group were rated as "very much improved" or "much improved" compared to 2/26 (8%) of controls (p=0.0471); 24/30 (80%) in the treatment group improved compared to 10/26 (38%) of controls (p=0.0024). Mean parental CGI scores significantly improved in the treatment group compared to controls in overall functioning (p=0.0336), receptive language (p=0.0168), and eye contact (p=0.0322). On the ABC, significant improvements were observed in the treatment group in total score, irritability, stereotypy, hyperactivity, and speech (p<0.03 for each), but not in the control group. In the treatment group compared to the control group, mean changes on the ABC total score and subscales were similar except a greater number of children improved in irritability (p=0.0311). On the ATEC, sensory/cognitive awareness significantly improved (p=0.0367) in the treatment group compared to the control group. Post-hoc analysis indicated that children over age 5 and children with lower initial autism severity had the most robust improvements. Hyperbaric treatment was safe and well-tolerated.

Conclusions

Children with autism who received hyperbaric treatment at 1.3 atm and 24% oxygen for 40 hourly sessions had significant improvements in overall functioning, receptive language, social interaction, eye contact, and sensory/cognitive awareness compared to children who received slightly pressurized room air. Trial Registration: clinicaltrials.gov NCT00335790