

# Hyperbaric oxygen in the treatment of childhood autism: a randomised controlled trial.

*Sampanthavivat M1, Singkhwa W, Chaiyakul T, Karoonyawanich S, Ajpru H.*

## Abstract

### BACKGROUND:

Promising results with hyperbaric therapy for children with autism have been reported, but most involved the use of only mild pressure with oxygen supplementation. To date, there has been no randomised, blinded trial of 100% oxygen administered at hyperbaric pressure. This study evaluated the efficacy of hyperbaric oxygen therapy (HBOT).

### METHODS:

Sixty Thai children with autism, aged three to nine years, were randomly assigned to receive 20 one-hour sessions of either HBOT at 153 kPa (1.5 ATA) or sham air at 116 kPa (1.15 ATA). Effects on behaviour were measured using the Autism Treatment Evaluation Checklist score (ATEC) and clinical improvement was measured with the Clinical Global Impression (CGI) system; in particular the clinical change (CGIC) and severity (CGIS) sub-scores. These were evaluated by parents and clinicians, both of whom were blinded to the actual exposure.

### RESULTS:

The mean total ATEC scores by both parents and clinicians were significantly improved after intervention in both arms of the study compared to the score before intervention ( $P < 0.001$  in both groups by parents,  $P = 0.015$  in HBOT group and  $P = 0.004$  in sham group by clinician). There were no statistically significant differences in average percentage changes of total ATEC score and all subscales scores when comparing the HBOT and sham air groups, either by parents or clinicians. Changes in the CGI scores following intervention were inconsistent between parents and clinicians. For severity scores (CGIS), parents rated their children as more improved following HBOT ( $P = 0.005$ ), while the clinicians found no significant differences ( $P = 0.10$ ). On the other hand, for change scores (CGIC) the clinicians indicated greater improvement following HBOT ( $P = 0.03$ ), but the parents found no such difference ( $P = 0.28$ ).

### CONCLUSIONS:

Children with autism who received 20 sessions of either HBOT or a sham air exposure had significant improvements in overall behaviour but there were no significant differences in improvement between groups. The inconsistent changes on CGI sub-scores between parents and clinicians are difficult to interpret, but no overall clinically significant benefit from HBOT could be shown. Both interventions were safe and well tolerated with minimal side effect from middle ear barotraumas.