

Critical appraisal

The use of hyperbaric oxygen therapy did not decrease disability following ischaemic stroke

Clinical bottom line:

- 1 Hyperbaric oxygen therapy did not decrease disability after acute ischaemic stroke.
- 2 There is a trend for worse outcome following hyperbaric oxygen therapy.

Citation/s

- 1 Rusyniak DE, Kirk MA, May JD, Kao LW, Brizendine EJ, et al. Hyperbaric oxygen therapy in acute ischaemic stroke. Results of the hyperbaric oxygen in acute ischaemic stroke trial pilot study. *Stroke* 2003; 34: 571-574

Three-part clinical question

In patients with acute ischaemic stroke, does the application of hyperbaric oxygen compared with standard measures result in any reduction in disability or death?

Search terms

Cerebrovascular accident, brain infarction

The study

Double-blinded concealed randomised controlled trial with intention-to-treat.

The study patients: Adults greater than 18 years with clinical characteristics of acute ischaemic stroke less than 24 hours in duration. No haemorrhage on C/T brain scan.
Control group: (N = 16; 13 analysed) Single 'sham'

treatment with 100% oxygen for 60 minutes at 1.14 bar (143 kPa) in a monoplace hyperbaric chamber.

Experimental group: (N = 17; 17 analysed) Single treatment with 100% oxygen for 60 minutes at 2.5 bar (255 kPa) in a monoplace hyperbaric chamber.

The evidence: See Table 1

Comments

- 1 NIHSS is a widely used disability scale specifically designed for stroke assessment. Favourable outcome was improvement >4 points or score of 0 at 24 hours, and score equal to or less than 1 at 90 days.
- 2 Missing and dead patients allocated to unfavourable outcome in the 90-day analysis above. Analysis excluding these subjects was difficult to interpret.
- 3 Single 60-minute hyperbaric oxygen treatment is an unusual intervention.
- 4 Co-morbidities not described as potential confounders.
- 5 The control group was younger and predominantly white. Effect on result is unknown.
- 6 Authors used results to abandon further investigation.
- 7 Three additional stroke scales used for 90-day analysis showed no major differences.

Appraised by

*Drs Benjamin Kliot and Michael H Bennett,
 Department of Diving and Hyperbaric Medicine,
 Prince of Wales Hospital,
 Randwick, NSW 2031
 AUSTRALIA
 E-mail: <bkliot@mac.com>*

This appraisal has been adapted from the database of randomised controlled trials in hyperbaric medicine at <www.hboevidence.com>

TABLE 1.
MAJOR OUTCOMES IN RANDOMISED STUDY OF HYPERBARIC OXYGEN FOR ISCHAEMIC STROKE

Outcome	Time to outcome	Sham group rate	HBOT group rate	Relative risk reduction	Absolute risk reduction	Number needed to harm
Favourable NIHSS score	24 hours	31%	18%	44%	0.14	7
95% CI				100% to -49%	0.43 to -0.15	2 to infinity
Favourable NIHSS score	90 days	50%	29%	41%	0.21	5
95% CI				100% to -24%	0.53 to -0.12	2 to infinity
Death	90 days	19%	12%	37%	0.7	14
95% CI				100% to -93%	0.32 to -0.18	3 to infinity