

Traumatic Brain Injury

Pediatr Neurosci. 1988

Hyperbaric oxygen in the treatment of elevated intracranial pressure after head injury.

Brown JA, Preul MC, Taha A.

Department of Neurological Surgery, Medical College of Ohio, Toledo.

This study is the first to evaluate the effect of hyperbaric oxygen (HBO) on elevated intracranial pressure (ICP) after severe head injury during documented controlled ventilation, hypocapnea, and minute-by-minute ICP data collection. We studied the effect of HBO at 2 atmospheres absolute (ATA) with 100% O₂, on ICP in 2 patients, aged 5 and 21 years. Each patient had diffuse cerebral swelling after blunt trauma and after a gunshot wound, respectively. Both required controlled hyperventilation, osmotic diuretics and ICP monitoring. ICP, mean arterial blood pressure, pulse and atmospheric pressure were recorded at 1-min intervals during 1-hour treatments and for 15 min before and after HBO therapy. Controlled hyperventilation was continued during HBO therapy and PCO₂ was measured at intervals. Each patient underwent 4 treatments. Data was divided into 5 phases, all at 100% O₂; (1) prior to therapy; (2) during pressurization from 1 to 2 ATA; (3) at 2 ATA; (4) during depressurization from 2 to 1 ATA, and (5) after HBO therapy. During pressurization the mean ICP dropped from 13 to 8 Torr, rising to 14 Torr during HBO therapy at 2 ATA, and to 16 Torr during depressurization to 1 atmosphere, then returning to 12 Torr after HBO therapy. We conclude from this preliminary work that HBO may lower ICP in head-injured patients with diffuse cerebral swelling during the first 15 min, or pressurization phase, of therapy. However, rebound elevations in ICP may occur during or after treatment. No lasting effects of treatment were seen after concluding therapy. The effect of HBO on elevated ICP has not yet been clarified, but deserves further careful study in those patients with severe enough injury to require ICP monitoring.

PMID: 3270048 [PubMed - indexed for MEDLINE]