

Hyperbaric oxygen in traumatic brain injury.

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OBJECTIVES: This critical literature review examines historical and current investigations on the efficacy and mechanisms of hyperbaric oxygen (HBO) treatment in traumatic brain injury (TBI). Potential safety risks and oxygen toxicity, as well as HBO's future potential, are also discussed. **METHODS:** Directed literature review. **RESULTS:** Historically, cerebral vasoconstriction and increased oxygen availability were seen as the primary mechanisms of HBO in TBI. HBO now appears to be improving cerebral aerobic metabolism at a cellular level, namely, by enhancing damaged mitochondrial recovery. HBO given at the ideal treatment paradigm, 1.5 ATA for 60 minutes, does not appear to produce oxygen toxicity and is relatively safe. **DISCUSSION:** The use of HBO in TBI remains controversial. Growing evidence, however, shows that HBO may be a potential treatment for patients with severe brain injury. Further investigations, including a multicenter prospective randomized clinical trial, will be required to definitively define the role of HBO in severe TBI.