

# Rapid Recovery Hyperbarics

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## **Hyperbaric oxygen treatment improved neurophysiologic performance in brain tumor patients after neurosurgery and radiotherapy: A preliminary report;**

Schellart NA, Reits D, van der Kleij AJ, Stalpers LJ; Cancer (Feb 2011)

**BACKGROUND:** Cognitive performance often is impaired permanently in long-term brain tumor survivors after neurosurgery and radiotherapy. Hyperbaric oxygen treatment (HBOT) stimulates neovascularization of hypoperfused tissue and may result in improved functionality of damaged tissue. In this pilot study, clinical neurophysiologic tests were used to assess the effect of HBOT on brain performance. **METHODS:** Ten long-term brain tumor survivors received HBOT for severe cognitive deficits after neurosurgery and radiosurgery. Patients were tested before HBOT and at 6 weeks and 4 months after HBOT. The tests comprised a quantitative electroencephalographic (EEG) examination, the Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE) for memory performance, and 2 cognitive tests, the number connection test (NCT) and the continuous reaction time test (CRTT). Late event-related components (LERCs) of averaged evoked EEG responses to a visual odd-ball stimulus were analyzed from whole-head activity maps. For comparison, a control group of healthy individuals (no HBOT) also were investigated. **RESULTS:** After HBOT, the amplitude of the LERC with the longest latency, P3b (involved in object interpretation) was improved significantly ( $P = .02$ ). The amplitudes of the N200 (occipital, negative) and the intermediate P3a (centroparietal, positive), LERCs with shorter latencies, and of a small, positive, occipital visual component did not change. Neither latencies nor reaction times changed after HBOT. However, P3a and P3b (parietal, positive) latencies were longer in survivors than in healthy individuals. The NCT produced inconclusive results, but the IQCODE revealed an improvement. When outcomes of the NCT, CRTT, IQCODE, and P3b amplitudes were evaluated in common tests, **HBOT appeared to provide substantial improvement ( $P < .006$ ).**

**CONCLUSIONS:** On the basis of the current results, the authors concluded tentatively that HBOT improves neurophysiologic performance in long-term brain tumor survivors. Cancer 2011. © 2011 American Cancer Society