

Improvement in motor and cognitive impairment after hyperbaric oxygen therapy in a selected group of patients with cerebrovascular disease: a prospective single-blind controlled trial.

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BACKGROUND: Clinical and experimental evidence suggests that a localized decrease in oxygen brain tissue availability contributes to the neurological deficit in patients with cerebrovascular disease (CVD) who also present with frontal leukoaraiosis (LA) (periventricular hypodensity on CT scan) and lacunar infarcts. In a prospective controlled trial blinded to patients but not to investigators, we tested the effect of HBO2 on this group of patients. **METHODS:** Selected patients with symptomatic CVD, LA and lacunar infarcts received daily exposures of 45 minutes for 10 days to hyperbaric oxygen (n=18, HBO2 group) or hyperbaric air (n=8, control group). The control group subsequently received HBO2. Scores of conventional scales for motor and cognitive functions were obtained and videotaped before and after exposure. After the exposures, participants were followed on a monthly basis with systematic clinical neurological examination for up to 6 months. **Results.** There was a statistically significant improvement in all scales for the HBO2 group compared with the placebo group and in the placebo group after receiving HBO2 (p<0.05). Neurological improvement persisted in the majority of patients for up to 6 months. Repetition of the HBO2 protocol in 9 patients in whom symptoms recurred after 6 months resulted in improvement of symptoms. **CONCLUSIONS:** These data provide evidence consistent with the notion that HBO2 improves neurological function in patients with CVD, lacunar infarcts and frontal LA. Because of the lack of investigator blinding and a relatively small sample size in this study, larger, randomized controlled studies are needed to further test this hypothesis and to further define the role of oxygen therapy for brain repair in chronic brain disease.

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