

Treatment of Acute Central Retinal Artery Occlusion (CRAO) by Hyperbaric Oxygenation Therapy (HBO)--Pilot study with 21 patients

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BACKGROUND:

Central retinal artery occlusion causes severe loss of vision. Treatment trials include massage of the globe, paracentesis, antiglaucomatous eye drops, haemodilution or lysis therapy, which in individual cases did improve the visual outcome, although in general the prognosis remains poor. In this study we applied hyperbaric oxygenation treatment additionally to haemodilution to overcome retinal ischaemia until spontaneous recanalisation of the central retinal artery occurs. **PATIENTS AND METHODS:** Patients with central retinal artery occlusion and onset of symptoms up to 12 h were included. Following initial ocular massage and application of antiglaucomatous eyedrops, hyperbaric oxygenation treatment was performed twice daily for up to three days. **RESULTS:** 21 patients could be included. The time lag between onset of symptoms and admission was between 4 and 12 h. Initial visual acuity ranged from light perception to 0.08. On discharge 19 patients reported on a subjective visual improvement which could be confirmed in 13 patients. In 9 patients an initial increase of visual acuity under hyperbaric oxygenation treatment could be observed which however was again reduced by at least one line on discharge. No patient experienced vision loss below admission vision.

CONCLUSIONS:

Hyperbaric oxygenation treatment seems to improve the visual outcome in central retinal artery occlusion. Major parameters for visual prognosis are the time lag from the onset of symptoms to the beginning of hyperbaric oxygenation treatment and the time lag until retinal reperfusion begins.

Hyperbaric oxygenation treatment can compensate retinal ischaemia; however, the lack of glucose and accumulation of toxic metabolites is not addressed. A combination of hyperbaric oxygenation treatment with administration of glutamate antagonists or intravitreal glucose application might further improve the visual outcome.