Hyperbaric Chamber Helps Man Regain Use of Eye

By Judy Siegel

JERUSALEM (November 15) - A man who was blind one eye regained his sight after unusual treatment in the hyperbaric chamber operated by Rambam Hospital's ophthalmology department.

A few days ago, the man, 54, who immigrated from Russia a decade ago, was unable to see with his left eye. He was diagnosed as having a blood clot that blocked the central artery of the retina.

Binyamin Miller, head of the department in the Haifa hospital, said such a blockage prevents the supply of blood to the retina and in most cases causes blindness. "Tests on monkeys a few years ago showed that if the retina is deprived of oxygen for 100 minutes, the blindness is irreversible," he said.

The usual treatment is to lower the pressure inside the eye and expand the blood vessels immediately. In some of these cases, sight returns partially. Rambam ophthalmologists are among the first in the world to start treating the problem by putting the patient into a hyperbaric chamber with high-pressure oxygen.

The chamber is also used to treat divers suffering from "the bends" and victims of carbon monoxide poisoning.

So far, 40 people with this problem have been treated by Rambam doctors using high-pressure oxygen, and most enjoyed improved, but not perfect, sight.

"This last case was unusual, as the patient suffered from complete blindness in one eye and regained his sight fully after treatment in the chamber," Miller said.

Hyperbaric oxygen in the treatment of radiation-induced optic neuropathy

(Ophthalmology. 1986 Aug;93(8):1083-8), Guy J, Schatz NJ.

Four patients with radiation-induced optic neuropathies were treated with hyperbaric oxygen. They had received radiation therapy for treatment of pituitary tumors, reticulum cell sarcoma, and meningioma. Two presented with amaurosis fugax before the onset of unilateral visual loss and began hyperbaria within 72 hours after development of unilateral optic neuropathy. Both had return of visual function to baseline levels. The others initiated treatment two to six weeks after visual loss occurred in the second eye and had no significant improvement of vision. Treatment consisted of daily administration of 100% oxygen under 2.8 atmospheres of pressure for 14-28 days. There were no medical complications of hyperbaria. While hyperbaric oxygen is effective in the treatment of radiation-induced optic neuropathy, it must be instituted within several days of deterioration in vision for restoration of baseline function.

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Blinded Officer Regains Full Vision

By MICHAEL A.W. OTTEY
The Miami Herald

PEMBROKE PINES -- When lightning strikes and thunder roars, fear grows in the heart of Carlos Torres Jr.

The Miami-Dade County police officer, a resident of Pembroke Pines, was struck by lightning in July while he worked in his nursery. It left him blind.

After months of blindness, Torres said he had regained his sight in early December. He credited his recovery to hours spent in an oxygen chamber at the Ocean Hyperbaric Neurologic Center in Lauderdale-by-the-Sea.

Hyperbaric oxygenation, considered a treatment of last resort, has not been fully embraced by the larger medical community. Many doctors say its success remains unproven, while some health insurers refuse to pay for the treatment.

But Torres, 41, met with reporters at the center to say he's living proof the treatment works. He regained full vision Dec. 6, he said, and now has perfect vision in his right eye and better than perfect in the left.

"I came here with no vision," he said, standing next to one of the 12 oxygen chambers. "I started regaining my vision 10 minutes into my 53rd treatment."

For one hour a day, Torres lay in the oxygen tank. He has had 72 treatments. He began to see silhouettes, then colors on his 53rd treatment, with his vision gradually improving.

Torres began the hyperbaric oxygenation treatments a month after he was hit by lightning.

Dr. Richard A. Neubauer, medical director of the hyperbaric center, learned about Torres through news reports.

Neubauer said he thought Torres would be a good candidate for the treatment, even after eye doctors told Torres there was no hope of ever regaining his sight.

"We did a functional brain scan, and what we found was areas of his brain were not receiving oxygen," Neubauer said. "He was therefore an excellent candidate."

Neubauer said it was a very emotional day when Torres' sight returned.

"We had hoped and prayed it would work," he said. "He will require no further treatments. He's over the hump."
Cortical Blindness and HBOT


Very briefly, "41/45 (91%) patients with cortical blindness have recovered in various degrees".

Hyperbaric Oxygen Therapy reduces visual field defect after macular hole surgery

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BACKGROUND AND OBJECTIVE:

One of the serious complications that may arise after macular hole (MH) surgery is a temporal visual fields (TVF) defect. We hypothesized that hyperbaric oxygen (HBO) therapy improves the visual field (VF) in these patients.

MATERIALS AND METHODS:

Vitrectomy for MH was performed on 73 eyes from 1994 to 1997. TVF defect was detected in 19 eyes and, of that 19, 12 patients were followed. Seven patients were treated with HBOT therapy and 5 were controls. HBOT was performed for approximately 110 minutes a day with 100% oxygen inhalation and a maximum of 2.8 atmospheric pressure. This continued for 20 days. The preoperative VF determined by kinetic perimetry was considered to be 100%, and the VF following HBOT therapy was compared with that standard.

RESULTS:

We detected VF defect (postoperative VF area average 71.9+/-12.8% of the preoperative VF). In all 5 patients who had no HBOT therapy, TVF defects remained, while the TVF recovered remarkably in all patients treated with HBOT therapy. The VF recovered to 81.7+/-16.7% of the preoperative VF after 3 days of HBOT, and to 91.6+/-15.8% months after HBOT therapy.

CONCLUSION:

We speculated that the cause of TVF defect is likely to be chorioretinal circulation disturbance during surgery, and that HBOT activates the retinal cells and improves VF. We conclude that HBOT is useful in the treatment of TVF defect after macular hole surgery.
Treatment of Acute Central Retinal Artery Occlusion (CRAO) by Hyperbaric Oxygenation Therapy (HBO)--Pilot study with 21 patients


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.

Hyperbaric therapy for bilateral visual loss during hemodialysis


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Bilateral vision loss during hemodialysis is a rare but devastating entity, with grim prognosis for sight. The etiologies are diverse but share ischemia as a common mechanism. This is a report of a patient with bilateral sight loss during hemodialysis, with early hyperbaric treatment and return of visual acuity to baseline. Hyperbaric treatment should be considered, where early administration is possible, for bilateral blindness during hemodialysis.

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Hyperbaric oxygen therapy in two patients with non-arteritic anterior optic neuropathy who did not respond to prednisone

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Recent advances in understanding the effects of hyperbaric oxygen (HBO) on retinal anoxia gave rise to new interest in the possibility of using it as therapeutic treatment for ischemic conditions of the retina and optic nerve.

Two patients with non-arteritic anterior ischemic optic neuropathy due to a high-grade ophthalmic artery stenosis were treated with HBO at 2 atm abs in an effort to increase oxygen delivery for the eye.

Both patients showed marked improvements of visual acuity and visual field 3-5 months following the event. Our results are intriguing although the achieved improvement could be coincidental.

Visual loss as a late complication of carbon monoxide poisoning and its successful treatment with hyperbaric oxygen therapy


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PURPOSE: To present recovery from vision loss due to CO poisoning with Hyperbaric Oxygen (HBO) therapy in two patients. METHODS: Two female patients developed visual deterioration after carbon monoxide (CO) poisoning and were treated with hyperbaric oxygen therapy (HBO). Clinical examination, including visual acuity assessment, visual field examination and visual evoked potentials (VEPs) before and after the HBO therapy were performed. RESULTS: In Case 1 the visual loss started on the third day with visual acuity at the level of perception of hand movements at 10 cm in the right eye and finger count at 10 cm in the left eye. The visual evoked potentials (VEPs) had low amplitudes and prolonged (128 msec bilaterally) latencies (implicit times). After 48 sessions and 52 days of HBO therapy, the visual acuity became 0.2 in the right eye and 0.15 in the left eye. Visual field examination revealed homonymous right lower quadrant anopsia. The VEPs also improved. In Case 2 the visual acuity was 0.2 in the right eye and 0.1 in the left eye on the 6th day following the accident when the patient was admitted for treatment. The VEP latencies were within normal limits. After 36 days and 35 sessions of HBO therapy, the visual acuity became 0.7 on both eyes. The visual fields completely normalised. The VEP latencies in this case also became shorter.

CONCLUSION: It appears that the adverse effects of CO poisoning continue to progress during the late period and we believe that HBO treatment in this period may still be effective and will prevent some of the neurological sequelae such as visual loss from becoming permanent. Clinical, neurological, neuropsychological, visual outcome seems to be favourable even if HBO treatment started as late as 6 or 8 days after the exposure to CO.