

Medical Studies/Resources

Brain Injury

Case Study

Abstract: The near drowning of a 3 year old resulted in the child being wheel chair dependent, mental retardation. At 17 years of age, the patient received 52 HBOT sessions ensuing significant improvement. After 200 HBOT sessions the subject now walks upstairs with support, speaks English and Spanish.

Case Study

Abstract: All patients experienced a normal birth. The group consisted of a 4 year old encephalopathy (viral encephalitis infection) and a 6 year old which was in a coma for 3 months. After 4 HBOT sessions there was a decrease in spastic and sporadic movements. After 20 sessions, each patient experienced increased independence; increased use of arms and legs and ability to walk; using toothbrush, juice cup, feeding self; increased interaction, eye contact, smiles, more playful; increased verbal; and decreased drooling.

Golden ZL, Neubauer R, Golden CJ, Greene L, Marsh J, Mleko A. "Improvement in cerebral metabolism in chronic brain injury after hyperbaric oxygen therapy." Ocean Hyperbaric Center, Nova Southeastern University, 3301 College Avenue, Fort Lauderdale, FL 33314, USA.

Abstract: While no research study has yet demonstrated convincing evidence for the efficacy of Hyperbaric Oxygen Therapy (HBOT) in patients with chronic neurological disorders (CND), anecdotal studies have been supportive of its use in improving healing of the damaged brain. The current study hypothesized that (1) individuals with CND show increases in cerebral blood flow and metabolism as measured by Single Positron Emission Computed Tomography (SPECT) in the cerebral hemispheres, but not on measures of cerebellar and pons blood flow; and (2) younger patients show more improvement than older patients. The study used archival data to compare 25 older and 25 younger subjects who were given SPECT scans pretherapy, midtherapy, and posttherapy. ANOVAs using the SPECT scans as a within subjects variable and age as a between subjects variable confirmed the hypothesis that the cerebral measures all changed but that the cerebellar and pons measures did not. Post-hoc t-tests confirmed that there was improvement in blood flow from the beginning to the end of the study. An age effect was found on only two of the five measures; however, there were no interactions. Analysis by post-hoc t-tests showed that the younger group had higher blood flows, but not more improvement than the older group. The results provided the first statistical research data to show the effectiveness of HBOT in improving blood flow in CND. These results indicate that HBOT can be an effective part of the treatment for such clients.

Dr. Gunnar Heuser, MD, PhD, FACP, Clinical Study: Mild Hyperbarics for Impaired Brain Function

Abstract: Nine patients with exposure to chemical, pesticides, and solvents experienced impaired brain function. The symptoms included decreased memory and attention, and poor balance. After 10 HBO treatments at 1.3 ATA all patients reported improvement. The SPECT revealed improved blood flow and metabolism to brain tissue. HBOT is the most effective treatment for acute and chronic brain injury.

Neubauer, Richard S.; Gottlieb, Sheldon F. Southern Medical Journal, Sept 94, Vol. 87 Issue 9, p 993-996.

Abstract: Traumatic and vascular brain injuries result in the destruction of neurons and to a varying extent the formation of idling neurons. With the use of single photo emission computed tomography the presence of idling neurons and potentially recoverable brain tissue. The conclusion of all therapeutic departments was that HBO therapy and

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rehabilitative intervention resulted in significant improvements in all areas of previously identified deficits.

Study 1985

Abstract: Twenty coma patients were administered 80-120 HBOT treatments at 1.5 ATA. The length of coma ranged from 3-27 months. Fifty percent of the patients improved from treatment, 35% became self-sufficient, and all experienced less post-coma psychosis.

Calvert JW; Yin W; Patel M; Badr A; Mychaskiw G; Parent AD; Zhang JH. "Hyperbaric oxygenation prevented brain injury induced by hypoxia-ischemia in a neonatal rat model." Brain Research 2002 Sep 27; 951 (1), pp. 1-8.

Abstract: The occurrence of hypoxia-ischemia (HI) during early fetal or neonatal stages of an individual leads to the damaging of immature neurons resulting in behavioral and psychological dysfunctions, such as motor or learning disabilities, cerebral palsy, epilepsy or even death. No effective treatment is currently available and this study is the first to use hyperbaric oxygen (HBO) as a treatment for neonatal HI. Herein, we sought out to determine if HBO is able to offer neuroprotectivity against an HI insult. Seven-day-old rat pups were subjected to unilateral carotid artery ligation followed by 2.5 h of hypoxia (8% O₂) at 37 degrees C). HBO treatment was administered by placing pups in a chamber (3 ATA for 1 h) 1 h after hypoxia exposure. Brain injury was assessed based on ipsilateral hemispheric weight divided by contralateral hemispheric weight, light microscopy, and EM. Sensorimotor functional tests were administered at 5 weeks after hypoxia exposure. After HI, the ipsilateral hemisphere was 52.65 and 57.64% (P<0.001) of the contralateral hemisphere at 2 and 6 weeks, respectively. In HBO treated groups, the ipsilateral hemisphere was 77.77 and 84.19% (P<0.001) at 2 and 6 weeks. There was much less atrophy and apoptosis in HBO treated animals under light or electron microscopy. Sensorimotor function was also improved by HBO at 5 weeks after hypoxia exposure (Chi-square, P<0.050). The results suggest that HBO is able to attenuate the effects of HI on the neonatal brain by reducing the progression of neuronal injury and increasing sensorimotor function.