



NEUROSURGICAL LITERATURE

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Hyperbaric oxygen therapy for neurologic emergency and neurosurgical diseases: a systematic review of the literature

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I have reviewed reports concerning neurologic emergency and neurosurgical diseases adjunctively treated with hyperbaric oxygen (HBO) therapy. Some clinical studies indicate the favorable effects of HBO therapy on the events at an ultra-acute stage of brain ischemia. This therapy has been used in the treatments of other neurologic emergency diseases, such as brain and spinal injury, carbon monoxide intoxication, decompression illness involving the central nervous system and so on. Some reports clarify that patients with malignant gliomas have a prolonged survival by radiotherapy after HBO therapy. In addition, I have applied HBO preexposure to radiosurgical treatments for recurrent and brain stem gliomas. HBO therapy enhances the effects of some chemotherapeutic agents such as platinum drugs and nitrosoureas. Especially, the therapeutic effect of carboplatin, one of platinum drugs, is improved by HBO therapy in recurrent malignant tumors. Although radiation-induced brain injury is the most serious problem after radiosurgery, HBO therapy controls this condition and its progression. Wound infection after intracranial or spinal surgery is well controlled by anti-infectious drugs combined with HBO therapy. Now HBO therapy is an important therapeutic option in the fields of neurologic emergency and neurosurgery. However, high-quality randomized controlled trials that evaluate the short- and long-term risks and benefits of HBO therapy are necessary to better inform clinical decisions.

J UOEH. 1999 Dec 1;21(4):331-9.

New approaches in neurosurgery and hyperbaric medicine--the importance of preventive and industrial medicine - Kohshi K, Munaka M, Abe H, Tosaki T.

Neurosurgical patients have been mainly treated by surgical procedures over the past decades. In addition, hyperbaric oxygen (HBO) therapy in neurosurgery has been used in patients with ischemic cerebrovascular diseases, head trauma, spinal damage, postoperative brain edema and others. However, the main therapeutic methods for neurosurgical diseases have changed dramatically due to developments in radiological techniques, such as radiosurgery and intravascular surgery. With changes in therapeutic methods, HBO therapy may become a very important treatment option for neurosurgical patients. For example, HBO therapy combined with radiotherapy (UOEH regimen) and anticoagulant therapy appear to be very effective in the treatments of malignant brain tumors and ischemic cerebrovascular diseases, respectively. On the other hand, medical examinations under hyper- and hypobaric environments have not yet been fully studied in the central nervous system compared to those in the cardiopulmonary systems. Moreover, the mechanisms of cerebral lesions in decompression sickness and acute mountain sickness remain unclear. Clinical neurologic approaches are very important in these fields. Hence, clinicians and researchers skilled in both neurosurgery and hyperbaric medicine will be required for advanced treatment and preventive and industrial medicine.