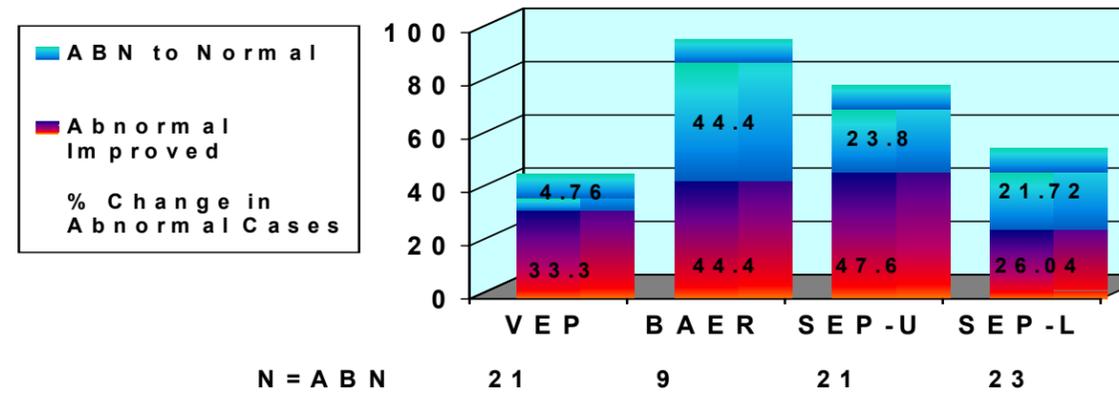
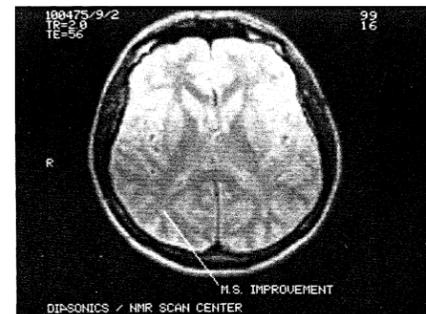
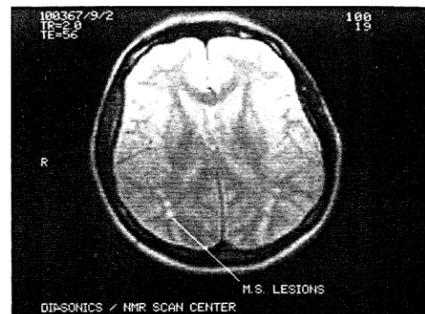


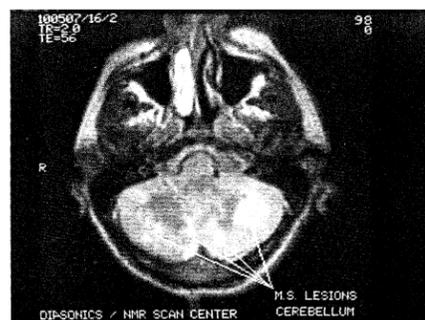
### Improvement After Treatment



NMR scans before and after HBO treatment.



47 year old male with spinal MS for 10 years. Kurtze III (pre-treatment) to II (post) Vanderbilt Grade II - Significant improvement in NMR. Clinical improvement in bladder, walking, sexual function, fatigue.



58 year old male with spinal MS for four (4) years. Kurtze III (pre-treatment) to II (post). Vanderbilt Grade IV - Significant improvement in NMR. Clinical improvement in finger to nose ataxia and hand dexterity.

**Bibliography**

Barnes MP, Bates D, Cartledge NEF, French JM, Shaw DA. Hyperbaric oxygen and multiple sclerosis: short-term results of a placebo-controlled, double blind trial. *Lancet*; Feb 9, 1985:297-300.

Barnes MP, Bates D, Cartledge NEF, et al. Hyperbaric oxygen and multiple sclerosis: final results of a placebo-controlled, double-blind. *J Neurosurg Psychiatry* 1987; 50: 1402-1406.

Barnes MP, Bates D, Cartledge NEF, et al. Hyperbaric oxygen and multiple sclerosis: short term results of a placebo controlled double blind study. *Lancet* 1985; I:297-300.

Fischer BH, Marks M, Reich T. Hyperbaric-oxygen treatment of multiple sclerosis, a randomized, placebo-controlled, double blind study. *N Eng J Med*. 308:181-186, 1983

Gottlieb SF, Neubauer RA. Multiple Sclerosis: its etiology, pathogenesis, and therapeutics with emphasis of the controversial use HBO. *J Of Hyperbaric Med* (3) 5; 1988: 142-164.

Gottlieb SF, Neubauer RA. The etiology of multiple sclerosis revisited: A new and extended vascular-ischemic model. *J of Medical Hypotheses* 1990: in press

Kindwall EP, McQuillen MP, Khatri BO, et al. Treatment of multiple sclerosis with hyperbaric oxygen. *Arch Neurol* 48: 195-199, 1991.

Neubauer RA. Exposure of multiple sclerosis patients to hyperbaric oxygen at 1.5-2ATA: a preliminary report. *J Fla Med Asn* 1980;67:498-504.

Neubauer RA. Treatment of multiple sclerosis with monoplace hyperbaric oxygenation. *J Fla Med Assoc* 1978; 65:101-104.

**A Letter to the Editor**

### The Treatment of Multiple Sclerosis with Hyperbaric Oxygen Therapy--The True Story

By Richard A. Neubauer, MD and Sheldon Gottlieb, PhD

I want to congratulate you on the excellent article published by Dr. Philip James and David Perrins substantiating the use of hyperbaric oxygenation (HBO) in the treatment of Multiple Sclerosis. I would, however, like to point out a bit more of the historical background as to what has occurred in the United States.

In the late seventies, I was treating a patient with osteomyelitis and concomitant multiple sclerosis. The osteomyelitis needed recurrent treatment, and each time the patient would receive hyperbaric oxygenation, the multiple sclerosis symptoms would abate.

Thus, we treated several patients and the findings were consistent. This was published in the *Journal of Florida Medical Association* 1978. A larger series accrued and was published again in the *Journal of Florida Medical Association* in 1980.

The conclusion is that hyperbaric oxygenation is not a cure for multiple sclerosis, and that it is dose sensitive. It takes intermittent treatments and it alters the natural history of the disease in a favorable fashion. The editorial comments from first publication ranged from *arrogance* to *brilliance*.

At about this time, the National Multiple Sclerosis Society awarded the late Dr. Bougaslav Fischer, the then professor of Neurology at New York University, \$250,000 to disprove these claims as this was not considered a valid concept. In 1983 Fischer watered down his version of a double-blind control crossover study, and in 1983 this was published in the *New England Journal of Medicine*.

The results, however, validated the original description from the Ocean Hyperbaric Center. Did Fischer receive acclaim? Was he nominated for the Nobel Prize? No, Dr. Fischer was fired and his chamber was put out for trash. It is very difficult to fight big business.

Today, if you call the MS Society, they do not recommend Hyperbaric Oxygenation and at times say that it causes blindness. No such side-effect has ever been reported.

We validated many of our conclusions by studying 20 patients with MRIs before and after the first treatment and again after twenty treatments. The findings were that the scattered lesions in the cortex did not appear to change, but any lesion in the basal ganglia or mid brain, disappeared after one hour of hyperbaric oxygenation. Similar findings were found with visual evoked potentials, BAER and upper and lower somatosensory evoked potential.

These findings were presented at meetings worldwide and throughout the United States. This, however, is a non-drug, and did little for the neurologist who frankly did not understand hyperbaric oxygenation. A series of double-blind control studies were later published, which were doomed to failure by design, in order to disprove this mechanism.

However, Doctors James and Perrins in the United Kingdom have accumulated data that is invaluable. It will be totally impossible financially or statistically to obtain such information as they have. Over a twenty year period, they have treated up to twelve thousand cases per year and have twenty year follow up.

In 1982, Mrs. Neubauer and I traveled to London to speak to a group called ARMS (Action for Research in Multiple Sclerosis [now dissolved]), which was a group of patients, caregivers and neurologists. Dr. James, already familiar with hyperbaric oxygenation and hyperbaric oxygenation with relationship to the blood-brain barrier, began a movement with Dr. David Perrins that really did prove the entire concept.

The paper by Barnes and Bates tended to discredit the use of hyperbaric oxygenation in Multiple Sclerosis but the results belied their conclusions. This was pointed out in Dr. James critique.

A year later, they published the positive results on bowel, bladder and cerebellum. In the United States, several further articles were published, all doomed to failure because of improper selection of patients and improper protocol.

The one paper that the author claimed put the final nail in the coffin for hyperbaric oxygenation was by Dr. Eric Kindwall. This paper was seriously flawed and the comments following publication suggested that it probably never should have been published.

Dr. Gottlieb and I published two further articles in 1988 and 1990 on the etiology of multiple sclerosis being a wound in the central nervous system. This wound is indirectly due to a focal hypertension in medically susceptible vessels resulting in vascular injuries and initiation of a series of biochemical and physiological events culminating in an ischemic hypoxic situation, leading to demyelination, a secondary damaging process associated with the immune system. These are the obvious reasons why hyperbaric oxygenation would be much more beneficial if used in the earliest stage.

In Dr. Gottlieb's book "The Naked Mind," published by Best Publications, there is an excellent chapter on multiple sclerosis describing the history and tribulations of having this method evaluated, discredited and again brought back to life by Dr. James.

In simplest terms these MRI films show the disappearance of lesions in the mid brain after a single treatment with hyperbaric oxygenation (1.5 ATA at one hour). The mid brain is very well supplied vascular wise and serves an important function. The disappearance of either beginning lesion after one hour treatment is significant. The studies on the evoked potential indicate a sophisticated measurement of the transmission of electrical impulses.

For the visual evoked potential, the transmission of the impulse is through the optic nerve to the occipital cortex, the vision center of the brain. If normal, the pathways are direct.

The BAER is the same for the hearing via the eighth cranial nerve to the hearing center of the brain. The upper and lower somato sensory checks the status of the transmission by way of the spinal cord.

In MS, the lesions may be brain plus spinal cord—rarely just the spinal cord alone, the combination being the most common. In the simplest term, these are highly significant documentation of the positive effects of hyperbaric oxygenation as a therapeutic modality in the treatment of Multiple Sclerosis.

Newer techniques with Magnetic Resonance Imaging (MRI) will now indicate activity of a lesion by the use of a tracer called Gadolinium. Also, functional MRIs will become more valuable as MRI Spectroscopy is used to measure very specific chemical elements such as lactic acid. These future advancements hopefully will substantiate the use of hyperbaric oxygenation as a main therapeutic modality in Multiple Sclerosis. No drug has withstood this rigorous testing with such positive results.

*The conclusions:*

HBO is not a cure. It is dose sensitive, it requires intermittent continuous treatment, and alters the natural history of the disease in a favorable fashion.

Then again, what could we expect since this is not a drug and not a money maker. We live in a drug-related, financial environment.