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## **New Frontiers: Anti-Aging Properties of Hyperbaric Oxygen Therapy**

New Frontiers: Anti-Aging Properties of Hyperbaric Oxygen Therapy

As the world is becoming more industrialized it is also "going gray." Globally, the life span has reached a level of 63 years. Obviously, the geriatric population is growing; so are many detrimental effects of aging: strokes, heart attacks, dementia, arthritis, etc. Therefore improvement of quality of life becomes a real issue among millions of aging folks. The medical and scientific world has started taking a deep look into different therapeutic modalities to extend one's life and improve its quality: diets, nutritional supplementations, growth hormone therapy, cellular therapy, and chelation therapy among many others.

Restoring brain functioning is one of many important goals of anti-aging therapies. Richard A. Neubauer, MD, one of the authors of this article suggested in the late 70s' that Hyperbaric Oxygen can stimulate a reactivation of the zone around a special region surrounding the central area of a stroke or brain injury site, known as "ischemic penumbra." The diminished oxygen supply to the "penumbra" is one of a few causes for the loss and inadequacy of bodily functions. Hyperbaric Oxygen Therapy may restore function in areas of the brain that are hypoxic (low in oxygen pressure) and are primarily vascular in origin. The ischemic penumbra of the surrounding zone may well be responsible for many of the symptoms, which are reversible with Hyperbaric Oxygen Therapy (HBOT), even in cases with onset 12-13 years prior to the treatment. However, in the cases of Alzheimer's Disease (a nonvascular, pathological process) Hyperbaric Oxygen Therapy (HBOT) will not be beneficial or efficacious.

Dr. Neubauer also pioneered the use of SPECT scans (Single Photon Emission Computerized Tomography) as an objective monitoring tool to determine success or failure of Hyperbaric Oxygen Therapy (HBOT) by determining the rate of blood perfusion and metabolic changes in suspected regions before, during and after HBOT.

Here are the cases that support our hypothesis: Case #1 -- D.L. -- a 70 year-old female who about one year prior to HBOT began to notice periods of confusion, forgetfulness, agitation and reached the point where she was unable to drive her car or live alone. Under most circumstances, a patient like this would be institutionalized in a care facility. The daughter, however, took mother to live with her. Both of these women were ministers in the Unity Church. DL, however, had lost her ability to work with parishioners. The SPECT scan showed that the patient very definitely did not have Alzheimer's disease, but had hypoperfusion in the frontal and temporal lobes. She was given a challenge with Hyperbaric Oxygen (3 treatments) and the scan was repeated. The changes in perfusion were striking. These paralleled her clinical progress. She then received a total of 33 treatments. After 20 treatments, the patient returned to a perfectly normal lifestyle, able not only to drive her car, tend her affairs, but also return to the pulpit. ASPECT scan conducted upon completion of 13 treatments showed that the improvements remained intact. Two and a half years later the patient is doing extremely well and she has had three maintenance Hyperbaric Oxygen Treatments.

Case #2 -- J.D. -- a 79 year-old male complained of dizziness all day for the past 2-1/2 months. He had suffered a stroke a month previously and was hospitalized 3-4 days, but no therapy was given. He also reported problems with memory and pain and stiffness in the neck. A baseline SPECT scan showed multiple areas of hypometabolism with the main deficit seen in the left temporal, occipital zone. After 10

Hyperbaric treatments (1.5 ATA, one hour), the patient reported that his memory was much improved, pain was relieved and he felt much stronger with increased energy. SPECT scan after 10 treatments showed significant improvement in the localization in the left frontal and both parietal regions. The uptake pattern was also less patchy in other areas.

Case #3 -- D.F. -- a 72 year-old female who had worked as a secretary for Dr. Neubauer. She was bright and alert. At one point in time she became slightly dizzy, slightly confused and had a left carotid endarterectomy. She appeared to be fine post-operatively and she continued working. However, shortly thereafter she retired. We did not see her for a number of months until we received a phone call from her daughter stating that D.F. was so confused, disoriented, dizzy and weak that she was selling her apartment and moving in with her. Because of this change, we had D.F. come in for SPECT scanning. Subsequently she had four Hyperbaric Oxygen Treatments. (1 hr., 1.5 ATA) followed by a repeat SPECT scan. The results were dramatic. All the symptoms including confusion and dizziness were gone and D.F. was able to live on her own. She continued to drive her car and take care of all personal affairs. Eighteen months later, the initial areas of re-perfusion had persisted and she remains clinically stable.

Many such patients are inadvertently classified as having Alzheimer's disease. Alzheimer's disease is primarily a problem of the young, between the ages of 50 and 60, associated with neurofibrillary-tangles. They present a specific pattern on the SPECT scan and they are not responsive to hyperbaric oxygenation. It is felt that there are thousands of mis-diagnosed Alzheimer's patients in the United States. The diagnosis is made either with SPECT scan, PET scan, brain biopsy, or autopsy. The terminology of such patients should be "Alzheimer's-like." Such patients are vascular in origin with many small strokes, hardening of the arteries, and are responsive to hyperbaric oxygen therapy rather dramatically.

These cases have clearly shown that with the use of Hyperbaric Therapy the lifestyle of these people has been improved and they have obtained a much better quality of life. Moreover their SPECT scans before and after HBOT showed the correction of the basic pathology. Additionally, in many other patients that we have treated for other than anti-aging purposes, the symptoms of aging were evident and subsequently cleared by HBOT. At this point it is our opinion that in order to really scientifically ascertain the efficacy of HBOT, the series of SPECT scans should be done before, during and after therapy with subsequent clinical correlations. The purpose of this report is to present the idea of using HBOT for anti-aging purposes and to stimulate a new study and accumulation of scientific documentation. We feel that the future of Hyperbaric Medicine must be appropriately explored both in the laboratory and in a clinical setting.

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By Richard A. Neubauer and Pavel I. Yutis

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