Volume 2 Issue 1

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Hyperbaric Treatment Newsletter

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Hyperbaric Oxygen Treatment for Lyme Disease

Late disseminated Lyme comprises many debilitating symptoms and has been considered difficult to treat in the medical community. Symptoms include fever, flu-like symptoms, migraines, fatigue, muscle and joint aches seen in early stage Lyme, but are also accompanied by immune system dysfunction, nervous system abnormalities, chronic axonal polyneuropathy, or encephalopathy, cognitive disorders, sleep disturbance, personality changes, and cardiac problems. While the condition is not considered fatal, symptomology is so severe that the many patients are bed-bound.

Due to the vast range of symptomology present in Lyme, often times patients are misdiagnosed with fibromyalgia, chronic fatigue syndrome, diabetes, multiple sclerosis, depression, or even arthritis. In addition, there is not one diagnostic test for the condition, further complicating a diagnosis and proper treatment.

Hyperbaric Oxygen Therapy (HBOT) has been used more and more frequently in the past decade to treat Lyme disease. A ground breaking study published by Dr. William Fife of Texas A&M University, demonstrated dramatic improvements in overall condition of Lyme patients treated with hyperbaric. Hyperbaric has been shown to reduce pain significantly, modulate the immune system, increase energy, alleviate sleep dysfunction, and reduce cognitive impairment. In most cases, patients are also able to discontinue use of antibiotics or other pharmaceuticals.

Hyperbaric oxygen treatments infuse the body with oxygen, increasing O2 levels by up to 1000% in body tissues through the increased pressure. Borrelia burgdorferi, the bacterium that causes Lyme are considered *microaerophilic*, needing small amounts of oxygen to survive, but dies in the presence of abundant oxygen. Hyperbaric also acts as an immune modulator and allows organ and gland functionality to normalize, reducing many debilitating Lyme symptoms. Because the chambers pressurize the atmosphere, hyperbaric acts as a detoxifier as well. By forcing oxygen into the tissues through this pressure, toxins, chemicals and other impurities are forced out.

As with antibiotic treatment, patients may experience a Jarisch-Herxheimer reaction, after initial hyperbaric oxygen treatment. Also known as "Herxing", the reaction occurs when the Borrelia burgdorferi are destroyed, resulting in a temporary "die off" effect causing fever, chills and weakness to occur for a short period of time. Many times a Herxheimer reaction indicates that a Lyme therapy is effective.

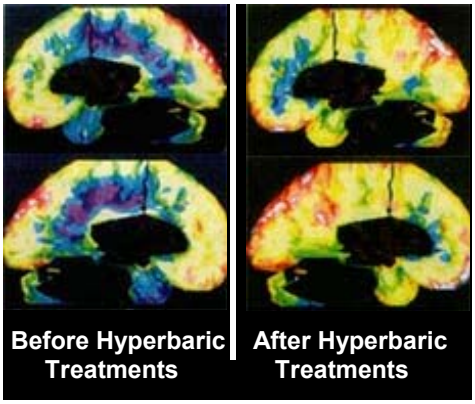
Clinical Study: Mild Hyperbarics for Impaired Brain Function

A study performed by Dr. Gunnar Heuser, M.D., PhD., FACP, Toxic Exposure Specialist, revealed that just 10 treatments with mild hyperbaric therapy resulted in enhanced short term memory and balance, as well as a decrease in headaches for those with diminished brain function.

The study was comprised of patients who suffered from brain function impairment due to chemical, pesticide and other toxic exposures. Patient symptoms prior to treatment included deficient cerebral function such as memory loss, inability to balance as well as attention deficit disorder.

The treatments consisted of 10 sessions in a hyperbaric chamber at 1.3 ATA, for one hour per day, five consecutive days for two weeks. To increase validity to the study results, SPECT scans of each patient's brain were taken before and after the hyperbaric treatments.

SPECT, or Single Photon Emission Computed Tomography measures brain activity and is performed by injecting the patient with a radioactive material which is distributed in the various regions of the brain. The scan depicts blood flow to regions of the brain via a three dimensional computerized color image of the scanned brain. MRI scans were also performed on all patients and revealed only loss of function to various brain cells rather than actual death of these cells.



Before Hyperbaric Treatments | After Hyperbaric Treatments

SPECT scans illustrate healthy brain function primarily in yellow, where green demonstrates a lack of oxygen and blood flow, and the darker areas and colors blue and violet indicate a visible reduction in blood flow and oxygen in the region.

The SPECT scan showed an increase to blood flow and oxygen to the temporal lobe, which is the area of the brain which controls short term memory. SPECT scans of patients taken before hyperbaric treatments showed a significant amount of dormant activity represented by the darker, blue and violet areas of the scan while scans taken of patient brains after hyperbaric indicated an increase in brain activity and blood flow. Dormant brain regions were replaced with a greater functioning tissues and represented a scan more similar to a healthy individual.

For more information on hyperbaric therapy or to read the complete study, visit **www.HBOTreatment.com** or call **678-957-0156**

THE HIDDEN LINK– *How Air Travel Can Worsen Chronic Illness*

On assignment in Tucson to write an article about a horse ranch, I'd begun to suffer the stirrings of a headache on the second leg of the stopover flight. I knew I would soon slowly crescendo over the night into terrible pain. I have been struggling with lyme disease for four years now, and one of the hallmark symptoms are migraine-like headaches that put you in bed for a day or two. I call them "lymegraines." I used to be clobbered by them once or twice a week, but I hadn't had one since I'd been using a home mild hyperbaric chamber a few times a week. It had banished the crushing head pain to a mere memory.

But for some reason the flight had triggered one. I called Lance Brubaker, of NetPhysician, Inc, who I have turned to in times like these. I knew I needed a session, or I wouldn't be able to complete my assignment. Lance located two professionals, one an M.D. and the other a naturopath, with mild chambers in Tucson, and a few hours later I was blissfully breathing oxygen under pressure and my headache melted away. The doctor whose chamber I visited, Jane Orient, M.D., had bought it to treat her own multiple sclerosis, and confirmed that it seemed to be slowing or halting progression of the condition.

"A drop in pressure and oxygen will suppress immune function and signal pathogens to proliferate, or grow rapidly.

But the question lingered in my mind: why had the flight triggered a lymegraine? Lance suggested three reasons: 1) When airplanes are up at flying altitude, the pressure inside the cabin is about 8,000 feet. For someone who lives at sea level, that's a high altitude; 2) the air is re-circulated, and as all the passengers breathe out carbon dioxide, over time the oxygen level in the ambient air goes down; 3) stop-over flights cause dormant bacteria to replicate. Going up and down twice in one day is harder on the body than a straight flight. In other words, hypoxia, low altitude, and changing pressure several times had overwhelmed my defenses. And just 40 minutes in the chamber reversed that.

Lance explained that the same thing frequently occurred during his bout with lyme in the early 90's when he flew for business. "Flights greatly exacerbated my lyme symptoms, especially connecting or stop over flights. I would get off the plane and my body was trembling and sweating. I became hyperactive, disoriented, extremely anxious and would be unable to sleep for days afterward." Lance discovered that both pathogens and the immune function were susceptible to changes to lower oxygen and lower pressure. "A drop in pressure and oxygen will suppress immune function and signal pathogens to proliferate, or grow rapidly. The exposure to such low pressures experienced on an airplane can cause jet lag in a healthy person and a severe relapse for the chronic disease patient.

"Lower pressure can cause a reduction in oxygen dilution into hemoglobin," explains Dr. Rhett Bergeron, M.D., of Roswell, GA. "This results in an overall reduction in oxygen. Flying or vacationing at high altitudes may not be a wise choice for the immune compromised or those with chronic conditions. But if these patients do hyperbaric treatments before and after flying, they can protect themselves.

So is there a connection between the relative hypoxia of air flights and the hypoxia common in chronic illness? I turned to Ignacio Fojgel, M.D., Head of the Complimentary and Integrative Medicine Department at Maimonides University School of Medicine in Buenos Aires, a specialist in hyperbaric oxygen treatment who utilizes two mild chambers at his hospital in Buenos Aires. He'd written a research paper on the connection between the two, especially on neurological conditions like lyme. "The diminished oxygen levels in flight are sufficient for healthy individuals, but not for patients with pre-existing conditions," says Fojgel. "They may show symptoms after as little as two hours of flight." Airplane flight for the chronically ill should therefore be regarded as a kind of potential altitude sickness, and precautions taken.

Fojgel believes that a good deal of jetlag is actually a mild form of altitude sickness. "Most in-flight and post-flight disorders, including most so-called "jet-lag" can be traced to the hypoxic event called air travel. If a flight doesn't traverse more than two time zones, any such incident should not be termed jet-lag, but ascribed to hypoxia."

In fact, says Fojgel, "A patient of mine had a stroke after flying from Bangkok. After only 25 mild hyperbaric sessions, there were no signs left of the stroke. The doctors at the best clinic in Buenos Aires were aghast."

So what can you do if you travel frequently by airline, or if you have any kind of chronic illness that could be worsened by air travel? I know what I'm going to do from now on: pre-treat the day before in my chamber, and know ahead of time which practitioners have mild chambers in the city I'm going to, so that I can have a treatment the day after I touch down. For a particularly long flight, I'd also ask my doctor for a prescription for in-flight oxygen. While breathing oxygen does not have the same benefits as when it is used in conjunction with hyperbaric, it can help ward off some symptomology. Dr. Fojgel also recommends the following:

- Heavy meals should be avoided prior to ascent.
- Alcohol promotes dehydration, and is to be avoided.
- Oxygen by mask should be provided to neurological patients flying for more than 2 hours.
- "Super-charging" with several hyperbaric sessions, prior to the flight or ascent can be considered
- Adequate sleep is recommended, but not onboard. Exercise in your seat every two hours.

For more information visit:
www.GenoxInc.com - info on hyperbaric oxygen equipment.
www.HBOTreatment.com – Medical studies and info on Hyperbaric Therapy

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Mild Hyperbaric Therapy As An Immune Modulator

Gunnar Heuser, M.D., Ph.D., Olga Aguilera, M.D., Sylvia Heuser, M.A., Shayna Kasbee, B.A., and Tanya Peach, B.S.

Mild Hyperbaric Oxygen treatment (mHBO) in a portable chamber, at 1.3 ATA and 24% oxygen, administered daily for ten consecutive sessions (1 hour each) improves brain function as measured by SPECT brain scan and a test for attention and reaction time.
Patients often report a sense of well-being and youthfulness after mHBO therapy.

We wondered whether immune function is positively affected by mHBO. We chose apoptosis (a function of programmed cell death) and natural killer cell activity (a function of immune surveillance) as parameters in 9 patients.

Our preliminary data, illustrated in graph form, show that 10 mHBO sessions can positively affect immune function: natural killer cell function increases and apoptosis values decrease. More sessions may be needed to affect positive results in an even higher percentage of patients.

We conclude that mHBO can improve immune function. Since apoptosis numbers increase with age the reversal of that process may have significance with regard to aging.

Portable Home Hyperbaric Chambers Treat Chronic Lyme

The New Epidemic

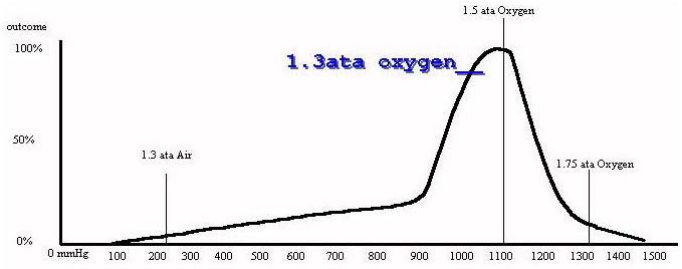
Lyme disease is epidemic: it is the fastest growing vector-borne disease in the world. More and more patients are showing up with chronic forms of the infection, leading to multisystemic illness and disability that is devastating to the individuals and families suffering from it. It is increasingly difficult to cure, even with intense regimens of antibiotics. Recent major articles in People Magazine, The Washington Post, and Good Housekeeping describe the debilitating effects of this tricky infection.

Oxygen to the Rescue?

Hyperbaric oxygen treatment (HBOT) has been a mainstay of alternative treatments for lyme for over a decade now. HBOT forces oxygen into the tissues under pressure, flooding cells and helping to kill organisms and assist the immune system (white blood cells need oxygen in order to kill intruders). Until recently, however, treatment was only available at clinics, which meant that the lyme patient had to travel for treatment, often staying in a motel for weeks or months. The cost was prohibitive. Although profound improvement often resulted, just as many patients slowly relapsed over time, probably due to dormant forms of the bacteria multiplying once treatment ceased. A minimum of 6 weeks and as long as 6 months of daily treatment may be necessary. The cost of treatment, travel, lodging and food at freestanding clinics means that most patients pay around $6,00-8,000 per month of treatment. Most patients do not have the time or money for this.

Now, portable hyperbaric chambers are available to patients for daily use in their homes. These chambers are often called "mild hyperbaric" because they pressurize to 1.3-1.35 ata (between 10 and 11 feet underwater). More and more conditions, from brain trauma to cerebral palsy to chronic infection, are being tested at these "lower" pressures, and they are being found effective. This is causing the hyperbaric industry to go through a sea change in their recommended protocols. Perhaps more is not more. Perhaps less is more.

With portable hyperbaric chambers, there is absolutely no disruption to lifestyle: treatments can be done in the home, at any time of day or night, for as little or long as desired, and the patient can sleep in his or her own bed. Most importantly, treatment can be long-term, which seems to be required for this slow-growing, intracellular, and refractory organism.



Are Home Chambers Effective?

Mild chambers pressurize to about 1.3-1.5 ata (about 10-11 feet underwater). This is far less than the common protocol used in clinics of 2.5 ata (about 50 feet underwater)—which was established by William Fife in his original experiments on lyme and hyperbaric oxygen. Is 1.3 enough pressure to be effective? We think so. Lyme is a microaerophilic bacterium, one that can survive in small amounts of oxygen. It dies in air, for instance. According to Fife, "a lethal level of oxygen for the spirochete falls somewhere between 30 mm Hg, and 160 mm Hg." At 1.3 ata 90 mmHg to 135 mmHg will reach the tissues—likely killing at least some lyme. Just as important, the oxygen will help restore the function of hormones and boost immune function, increasing the metabolic efficiency of every cell in the body—which is key in lyme disease, because it so disables the body's systems. Finally, by adding in other treatments (such as antibiotics, home heat therapies like saunas and peat baths, and herbs, vitamins and minerals), one can attack the lyme steadily and methodically, allowing enough time for the body to heal and gain health, putting lyme in permanent remission.

In fact, 1.3-1.5 ata may be ideal pressures for the body. See the graph showing oxygen saturation in tissues at varying pressures.

(continued on page 4)

Comparison of Types of Hyperbaric

While there are many different manufacturers and designs of hyperbaric chambers, there are only 2 basic types of units, high-pressure chambers and mild hyperbaric units. The type of chamber used will depend on the condition and physician's protocol. High-pressure hyperbaric chambers, pressurize up to 35 pounds per square inch (PSI) under normal therapy conditions, where as mild hyperbaric chambers typically pressurize to 4-7 PSI. Both types of chambers have shown benefits in medical studies to many chronic conditions. However, the two types of hyperbaric have distinct advantages and disadvantages

Advantages of Mild Hyperbaric Chambers

- Relatively low purchase price
- Easy to use/ Requires little space
- Uses regular 110 outlet in all homes
- Patients can self-load for home use
- Portability of chamber for relocation
- Air-over system- extra O2 is not required
- Less depressurization time
- No risk of fire

Advantages of High-Pressure Hyperbaric Chambers

- Greater working pressure- allows more flexibility in treatment
- Durability- made of stainless steel
- Stainless steel chamber does not cause problems with chemically sensitive people
- Ability to use a variety of electrically generated signals during therapy
- Ability to conduct intensive care activities during treatment

Most recent studies have shown that greater benefits with hyperbaric therapy are seen at pressures of 1.5 ATA or below. The utilization of higher pressures common with traditional hyperbaric systems have shown immune suppression .

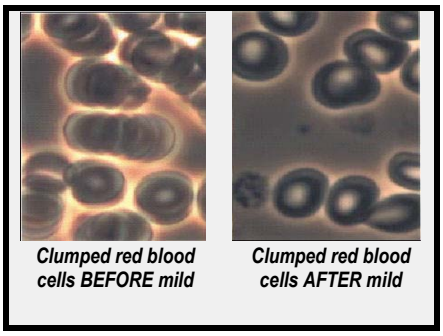
Portable Home Hyperbaric Chambers Treat Chronic Lyme

How Does Mild Hyperbaric Oxygen Work?

Lyme disease, like many chronic illnesses, causes a chronic, debilitating dysregulation of the entire immune and nervous system. Patients suffer from simultaneous exhaustion and insomnia, they become sensitive to noise, sound, smells, and light; they react adversely to chemicals; they may even suffer from visual and olfactory hallucinations. All of this may be treated by mild pressure hyperbaric oxygen. According to Ignacio Fojgel, M.D., "The action of pressure and oxygen on the autonomic nervous system has never been given its due attention. I have been insisting that many effects of the chambers are dependent on modification in the autonomic nervous system. Many people sleep during the session or become relaxed and kind of peaceful. Parasympathetic up-regulation, and/or sympathetic down-regulation occur. That is why we sleep during an illness: a relatively high parasympathetic tone is needed for most healing process to happen."

The Proof is in the Brain and Blood

Mild Hyperbaric oxygen treatments can improve brain function almost immediately, and can improve the appearance of the blood in less than an hour. One remarkable study by Dr. Gunnar Heuser measured brain function by SPECT scan after treatment. *(see study page 2 bottom)*



Clumped red blood cells BEFORE mild

Clumped red blood cells AFTER mild

Finally, we have included a photo of red blood cells before a 40-minute session in a portable, mild hyperbaric chamber, as well as an after photo. No extra oxygen was used: simply pressurizing with air raises oxygen levels in the air from 21% to 24%, and pushes that extra bit of oxygen more deeply into the plasma. These pictures show that red blood cells, which tend to clump in chronic illness, unclump after a 40 minute session. When unclumped, more oxygen is available to the system because the entire red blood cell is freely moving through the body.

The Future is Bright

Chronic lyme disease—the fastest growing vector-born epidemic, and one of the most disabling chronic infections facing us today—is gaining national attention. Treatment with Hyperbaric oxygen via home chambers is also a burgeoning area of research, and as more and more doctors and patients experiment with this modality, its profound health benefits will be increasingly recognized, and treatment protocols refined and optimized. These home chambers provide a valuable tool on the road to cure for difficult conditions like lyme disease.

A Chronic Lyme Recovery Story

A highly active and athletic 29 year old, Richard first contracted Lyme while horseback riding in the Adirondacks in 1990. Soon, the disease began to ravage his body. He could not sleep, suffered from flu like symptoms and lost 40 pounds in the course of a month. He could not walk for 200 feet without passing out and entered the hospital emergency room on a monthly basis for extreme allergic reaction that caused severe swelling in his throat, preventing him from properly breathing. After visits to 36 different physicians and specialists, his symptoms continued to escalate, so he began delving into the world of medical research in order to save his own life.

Richard thus began to educate himself on everything having to do with immune disorders, possible therapies as well as relevant medical studies around the country. He soon discovered the research of Donald Freeman, M.D., and William Fife, Ph.D., at Texas A&M University. Both were conducting studies using hyperbaric oxygen therapy as a treatment for various immune disorders. The study theorized that the pressurized treatments had an immune modulating effect on those extremely dysfunctional immune systems. This interested Richard as he noted improvements in his condition after a scuba diving trip (increased pressure similar to hyperbaric) and observed severe set backs when he flew on a plane, which simulates a decreased pressure environment.

He soon acquired a hospital grade hyperbaric oxygen chamber in 1994 and began using the chamber for 60-minute sessions a few times a week. After noticing immediate improvement, Richard began a quest to scientifically document his results and contacted James McCoy, PhD. at an immunology lab in order to verify the effects of hyperbaric on the immune system. A Lymphocyte Blastogenesis Assay was performed pre and post hyperbaric treatments to measure T and B cell functionality. The results had proved that hyperbaric oxygen therapy had a re-balancing effect on the immune system. Richard's normally elevated B cells and low T cells moved into the normal range after each session with hyperbaric therapy. The trial was duplicated 11 times with identical results.

Within the first couple of weeks, Richard's symptomology began to disappear, but his use of the hyperbaric chamber continued, even through his remission. He followed the Life Force Hyperbaric Protocol of 3 treatments per week for 2 months and then subsequent treatments of twice a week for 2 years.

Due to the high operating expenses and usability issues of his hospital grade unit, he reluctantly began to cut back on hyperbaric treatments. The unit weighed 1500 lbs and operated off of 100% liquid oxygen. Treatments were performed in his garage because of the size of the unit and there was always the danger of using 100% oxygen. Richard did more research and stumbled on a portable mild hyperbaric chamber, which operated at significantly lower costs than his hospital grade unit. The portable chamber used ambient air to operate thereby eliminating the concerns about oxygen toxicity and other dangers surrounding the use of liquid oxygen that was required with the hospital grade unit. With the portable chamber, he was also able to perform self-treatments and placed the chamber in a bedroom for greater overall treatment comfort. He continued to use the new portable chamber to maintain his remission from Lyme and as an internal and external stressor control to avoid colds and flu's and quickly recover from a foot surgery.

Richard was fortunate to be able to gain access to a hyperbaric chamber for his Lyme recovery, although most patients are not able to afford a hospital grade unit. However, due to recent advancements in technology, portable mild hyperbaric chambers are more accessible to patients with a price starting at $9,500, and financed for as little as $4 per day. These chambers are catching on like wildfire with chronic disease patients who like these chambers because of the low operating cost, safety, ease of use, portability and low price tag. Due to the comfort of the portable chamber, the hospital grade hyperbaric unit now sits idle in the garage. **Call 678-957-0156 for information.**