

Oxygen Therapy Spurs Recovery in Some Stroke Patients

Study found certain survivors gained lost skills months, years after their attack

By Amanda Gardner

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TUESDAY, Jan. 22, 2013 (HealthDay News) -- Researchers in Israel report that they harnessed the same type of therapy that helps scuba divers recover from the bends to spur recovery in stroke survivors.

The treatment, known as hyperbaric oxygen therapy, involves closing the patient in a room with higher-than-normal air pressure, then delivering oxygen to rejuvenate damaged brain cells, called neurons. Oxygen levels in the body are increased tenfold with this therapy, the researchers said.

The 59 patients in the study showed differing levels of recovery, but some improvements were dramatic.

One 61-year-old woman who could not bathe, dress or climb stairs without help after suffering a stroke a year earlier was able to not only bathe and dress on her own, but also was able to shop and cook independently, the researchers said.

Another participant, this one a 62-year-old woman who had had a stroke 14 months earlier, regained lost language and reading skills and was able to walk, climb stairs and eat on her own. Before the stroke, she needed help with all of these activities.

Stroke from either a clot or a bleed in the brain can result in problems with mobility, loss of reading and speaking ability, and the inability to complete some of the most basic tasks of daily life, such as bathing, dressing and walking.

It is the leading cause of disability among adults in the United States.

Physical, speech and occupational therapy can help with recovery in the early weeks and months after a stroke, but many patients still don't fully recover their abilities.

Hyperbaric oxygen therapy is currently approved in the United States for decompression sickness (the bends), wound healing, carbon monoxide poisoning, skin grafts and thermal burns, among other applications, said the study's author, Dr. Shai Efrati, a faculty member at Tel Aviv's Sackler School of Medicine.

The findings are published in the January issue of the journal *PLoS ONE*.

Although the therapy has been studied in some patients soon after they experienced a stroke, this is the first study to look at the therapy in patients in the "late-chronic phase" after the stroke, the researchers said.

All participants in this study had suffered an ischemic or hemorrhagic stroke between six and 36 months earlier, and none had shown improvements in their condition for at least a month.

Half of the group received 90-minute sessions of oxygen therapy five days a week for two months while the other half received no treatment for two months and then started the oxygen therapy.

Brain imaging done before and after oxygen therapy showed improvements in brain activity after the therapy was completed, and some patients showed impressive functional improvements.

There were a few patients for whom improvements were marginal, said study co-author Eshel Ben-Jacob, a physicist with Tel Aviv University's School of Physics and Astronomy and the Sagol School of Neuroscience.

Side effects were fairly minimal: Six participants experienced ear troubles due to pressurization and two patients with a history of seizures had mild convulsions.

Two years after the treatment ended, the improvements held.

"The rationale is that once the damaged brain area has been reactivated, there is no going backward unless there is another insult," said Efrati, who also is head of the Hyperbaric Institute at Assaf-Harofeh Medical Center in Israel.

Ben-Jacob said high levels of oxygen allow neurons that have been damaged but are not destroyed to become active again, reconnecting with other neurons and firing the signals needed to maintain healthy brain function.

The researchers believe oxygen therapy also may be able to help people with other neurological conditions, such as Alzheimer's, and are currently studying it in patients with traumatic brain injury.

The study did have one significant limitation in that there was no group that did not receive oxygen therapy for the sake of comparison, Ben-Jacob pointed out.

But another expert noted that the trial followed what is considered the gold standard for assessing how effective a treatment is during a clinical trial. The stroke victims who got the oxygen therapy first were chosen randomly, the treatment regimens were compared going forward in time and other factors that might have influenced the outcome were controlled for, explained Dr. J. Bradley White. He is an assistant professor of neuroscience at Texas A&M Health Science Center College of Medicine and a neurosurgeon with the Texas Brain and Spine Institute in Bryan.

"People will look at this and see they did it the right way," he said. "I think it will garner more attention."

White added that although more studies are needed, he found the findings "exciting and promising."

More information

The [U.S. National Library of Medicine](#) has more on hyperbaric oxygen therapy.

SOURCES: Shai Efrati, M.D., faculty member, Tel Aviv University Sackler School of Medicine, and head, Hyperbaric Institute, Assaf-Harofeh Medical Center, Israel; Eshel Ben-Jacob, Ph.D., physicist, School of Physics and Astronomy, Tel Aviv University and the Sagol School of Neuroscience; Bradley White, M.D., Ph.D., assistant professor, neuroscience, Texas A&M Health Science Center College of Medicine, and neurosurgeon, Texas Brain and Spine Institute, Bryan; January 2013 *PLoS One*

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