Nashville Medical News
Middle Tennessee's Primary Source for Professional Healthcare News
April 2011 >> $5

VRT Enhances Vision Lost to Neurological Impairment

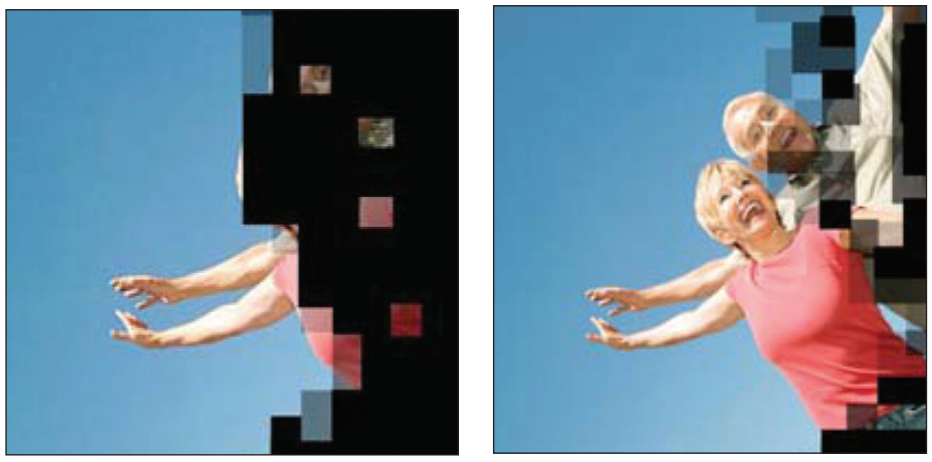
By CINDY SANDERS

After suffering a neurological injury, it is common for patients to work to regain function through speech, occupational, and physical therapy. However, 'adjustment' and 'compensation' have been the watchwords when it comes to the vision loss that often accompanies these neurological insults.

Treatment of vision loss due to stroke, traumatic brain injury (TBI), tumors or other neurological damage largely has focused on therapy to help patients compensate for their acquired vision deficits rather than to improve the field of vision. However, vision restoration therapy (VRT) appears to offer the opportunity for measurable improvement in sight. In a number of studies, FDA-cleared NovaVision VRT™ has demonstrated functional improvement for neurologically impaired patients.

Vision loss, particularly in the central 10 percent of the visual field, has an impact on quality of life and safety. Often, such loss impacts mobility and makes tasks such as driving, reading, writing, or even walking extremely difficult … if not impossible. Tom Bridges, vice president of sales and marketing for NovaVision, said patients suffering vision impairment from neurological injuries could lose up to half of their vision. "Put your left hand over your left eye and imagine that's your visual world," he said to demonstrate the limitations patients often feel.

To mitigate those limitations, NovaVision, which is based in Boca Raton, Fla., has focused on stroke and TBI patients using light stimuli therapy delivered through a non-invasive computer device. One study showed approximately 88 percent of patients had some demonstrable improvement in at least one of their daily functional activities with 75 percent of patients experiencing improved mobility. Additionally, 75 percent of the study subjects had "substantial" visual field improvement.



Before VRT, left and after VRT, right; Patient's field of vision expanded 8.5 degrees to the right.

A small study out of Columbia University Medical Center used functional MRI (fMRI) to track a patient's brain activity while undergoing VRT. The fMRI showed increased activity in the visual cortex one month after patients began receiving therapy. "It shows the increased activity in the ocular center doesn't just happen simultaneously," Bridges said. He added that while science has not yet completely answered the "how" and "why" VRT works, those behind the company believe the therapy induces neuroplasticity.

Interestingly, clinical studies have shown the time lapse between the onset of neurological injury and the initiation of treatment was not relevant. A patient's age also appears to be a non-factor in achieving successful outcomes. "The only contraindication is if someone has a light sensitive seizure disorder," noted Bridges. He did add that the therapy also wouldn't be appropriate for someone who had suffered such significant cognitive impairment that they were unable to perform functions or if the actual structure of the eyeball was so badly damaged that it couldn't receive stimuli.

The therapy is, however, an option for the millions of people worldwide who have experienced interference in the neurological pathways between the eyeball and ocular center. For this group, explained Bridges, "The eye still takes in the information. But if that information doesn't get back to the processing center, then you don't see. The eye isn't damaged, it's the brain."

After therapy, Bridges said, "On average, VRT patients permanently recover 5° of central vision, a critical gain for conducting many daily activities." He added that patients with significant improvement gain up to 8°. While this might seem like a small difference, he explained this improvement is in the central 10 percent of the eye and actually has exceptional impact on daily life.

The home-based therapy, which typically lasts six months, requires patients to twice daily spend 20-30 minutes with the computer device that uses light stimulation on the borders of sight and non-sight. Each patient's plan is customized and reformatted as vision improves. "In the initial stage, we identify where the patient can see and where they can't see, and there is always a fine borderline between the two," said Bridges. "We develop an algorithm of light stimulation that marches between that borderline." The computer device is connected to the NovaVision office via phone line. Once a month, a patient's data is downloaded, and the therapy plan is adjusted as warranted.

The best part, according to Bridges, is hearing the individual success stories of patients who can once again read, play tennis or golf, paint, go to movies and just take part in daily life. "We've given them their self esteem back … their ability to be more social and to be able to be out in public."

NovaVision was founded in 2003 after receiving FDA clearance for the company's patented technology. After falling victim to the floundering economy, the company was acquired by Vycor Medical, Inc. in November 2010 and was re-launched at the beginning of this year. It is estimated that between one and two million TBI and stroke patients in the United States alone suffer from visual field limitations. Patients with surgical trauma, tumors and amblyopia are also among the candidates who might benefit from VRT, which could be prescribed by an ophthalmologist, neurologist or physiatrist.