Medical Xpress

Treatment for headaches and dizziness caused by traumatic brain injury appears promising

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A recent retrospective study by four Michigan physicians shows strong evidence that symptoms of headache, dizziness and anxiety in some patients with traumatic brain injury potentially could be alleviated or even eliminated with specialized eyeglass lenses containing prisms.

The paper was published in the April 2010 issue of *Physical Medicine and Rehabilitation*. The investigators included doctors from three southeast Michigan hospitals and one in private practice, and involved 43 patients with TBI.

"This represents a new approach to the treatment of post-concussive symptoms," says Mark S. Rosner, M.D., adjunct clinical instructor in the Department of Emergency Medicine at the University of Michigan Medical School and Emergency Department staff physician at St. Joseph Mercy Hospital in Ann Arbor. "Vision was known to be affected by TBI, but now it appears that the vision abnormalities caused by the TBI are causing the other post-concussive symptoms."

The study suggests that TBI appears to be causing visual image misalignment - or vertical heterophoria. To correct this misalignment and prevent double vision, the eye muscles are utilized to force the eyes back into proper alignment. This causes the eye muscles to become overworked, strained and fatigued, which accounts for many post-concussive symptoms, including headaches, dizziness, anxiety and neck

pain. The use of prismatic eyeglass lenses to realign the images and reduce or eliminate eye muscle overwork led to a 71.8 percent reduction of patient's symptoms.

TBI affects 15 to 20 percent of our servicemen and women returning from Iraq and Afghanistan - caused mostly by explosions - and approximately 2 million people per year in the U.S. - caused mostly by falls, auto accidents and sports injuries. Approximately 10 to 25 percent of patients with TBI still have significant post-concussive symptoms one year after their injury.

"Treatment involves a multifaceted approach, including physical therapy, occupational therapy and multiple medications, and can take years to complete," says Jennifer E. Doble, M.D., a physiatrist at St. Joseph Mercy Hospital, Ann Arbor. "Prismatic lens treatment seems to allow the other therapies to be effective more quickly. And as a result, patients get better quicker, reducing the time and cost of caring for this patient population."

The first patient with TBI was recognized as having vertical heterophoria in 2005 by two of the study co-authors - Doble, a TBI rehabilitation specialist - and Debby L. Feinberg, O.D., an optometrist at Vision Specialists of Birmingham, Birmingham, Mich. The overlap of TBI and vertical heterophoria symptoms was significant: headaches, neck ache, upper back pain, dizziness, nausea, anxiety and reading difficulties. To date, no single unifying cause of TBI symptoms had been identified.

Doble initially saw patients with TBI. When vertical heterophoria was suspected, they were then referred to Feinberg for further evaluation.

"A retrospective analysis of the data from these patients was performed, and 43 patients were diagnosed with vertical heterophoria and included in the study," says Feinberg. "These patients had persistent post-

concussive symptoms despite receiving standard treatments and medications for an average of 3.5 years."

A diagnostic and therapeutic process developed by Feinberg was used to identify and treat vertical heterophoria. Prism lenses were added to the patient's baseline prescription, which resulted in a 71.8 percent reduction of symptoms in an average of 3.5 months.

"Our study concluded that in this group of patients who developed post-concussive symptoms and vertical heterophoria symptoms because of their TBI, malfunctioning of the binocular visual system was found to be a single common factor shared by all patients," says Arthur J. Rosner, M.D., an otolaryngologist at the Department of Otolaryngology, William Beaumont Hospital, Troy, Mich.

"Treatment of the vertical heterophoria with prismatic eyeglass lenses was found to be effective in reducing symptoms associated with both TBI and vertical heterophoria."

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