

Vertical Heterophoria As A Common Cause Of Dizziness And Headaches

Vertical Heterophoria (visual misalignment and ocular muscle strain) is a fairly common, yet not commonly thought of, cause of dizziness and headaches. Patients with Vertical Heterophoria have traditionally been very difficult to diagnose. They often remain symptomatic for long periods of time despite multiple medications, and return frequently to the care provider for further evaluation and care. Proper optometric correction can usually bring complete or almost complete relief of symptoms to these challenging patients. Optometric consultation should be considered early in the evaluation of patients with the appropriate symptoms who score abnormally on the Vertical Heterophoria Symptom Questionnaire (see attached). Consult optometrists who specialize in the diagnosis and treatment of patients with complex visual problems, including Vertical Heterophoria.

Ocular Anatomy and Physiology

The ability to see is one of our most amazing and complicated senses. An image enters the front of the eye through the cornea, goes through a focusing lens, and then strikes the retina, which converts the light to nerve impulses (figure 1). These impulses go to the occipital cortex, where they are converted into the images we see.

Muscles play a very important role in the process of vision. The ciliary muscle is the muscle that surrounds the lens, and with contraction or relaxation causes the shape of the lens to change. This is the focusing mechanism of the eye. When the muscle is contracted, the lens is rounder and objects that are nearer are in focus. When the muscle is relaxed, the lens is flatter and objects that are farther away are in focus.

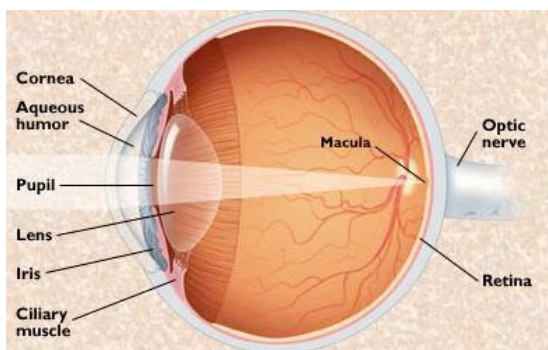


Figure 1

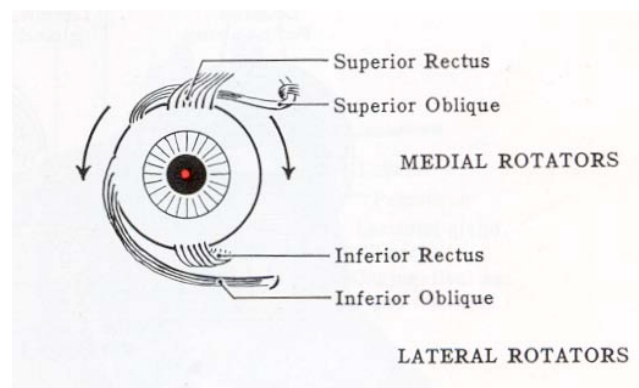


Figure 2

Muscles are also involved in the movement of the eyes. These extraocular muscles allow for vertical, horizontal, oblique and rotational eye movements (figure 2). Responding to direction from the brain, the extraocular muscles effect coordination of the

eyes with each other, allowing for the creation of a single image from two separate images (fusion).

Given such a complicated system, it's not surprising that there are a number of different mechanisms by which the visual system can malfunction. Anything that makes it difficult for the eyes to maintain fusion and to keep objects in clear focus can cause symptoms such as dizziness, headaches, reading difficulties and blurred vision. Some patients have only one of these symptoms, while others may have two or more symptoms. Most physicians would send the patient to an optometrist if they had blurry vision, but few would think to send the patient to an optometrist for symptoms of dizziness, headaches or reading difficulties. The most common ocular conditions that can cause these symptoms include Vertical Heterophoria, hyperopia, myopia, astigmatism and wearing a pair of corrective lenses that have been incorrectly prescribed.

Specific Problems

Vertical Heterophoria

Vertical Heterophoria is a condition where the two eyes have difficulty maintaining vertical alignment of the visual axes, making fusion challenging. Sometimes one eye is physically higher than the other eye. Other times the eyes are aligned correctly but neurological or muscular anomalies or conditions make visual alignment difficult. In some instances, this condition may be precipitated by head trauma, stroke, or acquired neurological disorders. However, most often this condition is congenital, though due to compensatory mechanisms, it may not manifest for years.

It is a high physiological mandate that fusion be maintained and that diplopia be avoided. The brain responds to this mandate by forcing the eyes into alignment. Over a long period of time, the resulting stress and strain on the extraocular muscles precipitates the symptoms of Vertical Heterophoria. The most common symptoms include headaches (usually in the front of the face or temporally) and a feeling of being disoriented, lightheaded or dizzy. As the extraocular muscles strain, they become fatigued, causing the image seen by one eye to not consistently overlap the image seen by the other eye – that is, fusion is no longer able to be continuously maintained. This moving in and out of fusion creates the feeling of dizziness, lightheadedness, and / or a sensation of imbalance. Those who suffer from Vertical Heterophoria may also have other symptoms in addition to those of headaches and dizziness. These include:

- additional **pain symptoms** such as face ache, eye pain or pain with eye movement (symptoms similar to sinus problems, migraines, TMJ problems); neck ache and upper back pain due to a head tilt (similar to spinal misalignment symptoms);

- additional **vestibular symptoms** such as motion sickness, nausea, poor depth perception, unsteadiness while walking or drifting to one side while walking (“I’ve always been clumsy”), lack of coordination (symptoms are similar to those seen in patients with MS, sequela of a stroke, an inner ear disorder or Meniere’s Disease);
- **reading symptoms** such as difficulty with concentration (symptoms are similar to those experienced with ADHD), difficulty with reading and comprehension, skipping lines while reading, losing one’s place while reading, words running together while reading (symptoms similar to those seen with a learning disability);
- **vision symptoms** such as blurred vision, double or overlapping vision, shadowed vision (symptoms similar to those seen in patients with MS); light sensitivity, difficulty with glare or reflection;
- **psychological symptoms** such as feeling overwhelmed or anxious when in large contained spaces like malls or big box stores, feeling overwhelmed or anxious in crowds (symptoms similar to those seen in patients with anxiety or agoraphobia).

This condition tends to run in families.

Optometric correction of this problem involves the addition of prism to the patients’ corrective lenses. The added prism will vertically relocate the images seen by the two eyes in such a manner as to allow for fusion to occur without extraocular muscle strain. Once fusion is restored and strain is eliminated, the symptoms resolve.

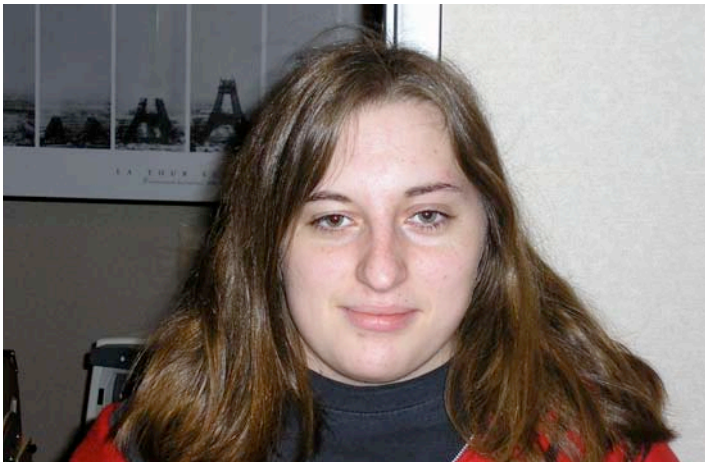


Figure 3

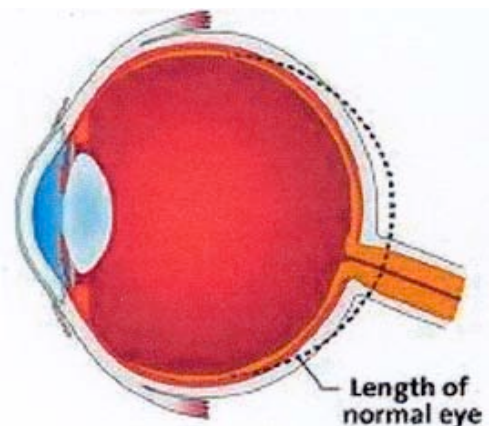


Figure 4

Hyperopia (Farsighted)

Hyperopia is a condition where far vision is clear, but near vision is not. In hyperopic individuals the globe is too short (figure 4), and the eye compensates for this by changing the shape of the lens via contraction of the ciliary muscle. The muscle strains to keep the lens in the correct position. This causes the muscle to fatigue and ache. When the muscle is no longer able to maintain the correction, vision becomes blurry during close-up activities. Proper optometric correction allows the ciliary muscle to relax, alleviating the pain and restoring near-vision clarity.

Myopia (Nearsighted)

Myopia is a condition where near vision is clear, but far vision is not. In myopic individuals, the globe is too long. The eye is not able to compensate for this discrepancy, and distance vision is blurry. Proper optometric correction restores vision clarity.

Astigmatism

Astigmatism is a condition of the cornea where the surface of the cornea is out-of-round. This causes some parts of the image to be out of focus while simultaneously other parts of the image are in focus. This stresses the ciliary muscle as it tries in vain to clarify the image, causing ciliary muscle strain. Proper optometric correction allows the ciliary muscle to relax, alleviating the pain and restoring visual clarity.

Incorrect prescription

It is absolutely critical that the eyeglass prescription be exactly correct. If the prescription is off, even slightly, the patient can get blurred vision, headaches, dizziness and a sense of imbalance. If there is any doubt as to the correctness of the patients' prescription, a second optometric opinion should be obtained.

How do you know if the patients' symptoms are caused by visual systems problems?

Quality of Vision Questionnaire

There are many causes of dizziness, headache and blurred vision. If, after the patient has been evaluated by the care provider, and no cause for the patients' symptoms have been elucidated, then it may be that the cause of the patients' symptoms is ocular in origin.

A Vertical Heterophoria Symptom Questionnaire has been designed by Dr. Debby Feinberg (see attached) to differentiate between those who might have an ocular cause for

their symptoms of dizziness, headache and/or blurred vision from those who may have some other cause for their symptoms. This questionnaire is very useful during initial evaluation, though it can be utilized effectively at any time. To score the questionnaire, use only the first 25 questions. Any question answered **ALWAYS** = 3 points, **FREQUENTLY** = 2 points, **OCCASIONALLY** = 1 point, and **NEVER** = 0 points. Patients who have an ocular cause for their symptoms have a total score of 15 or more points on this questionnaire. These patients should be referred to Dr. Debby Feinberg and Dr. Paul C. Feinberg, optometrists who specialize in the diagnosis and treatment of patients with complex visual problems, including Vertical Heterophoria.