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## **BALANCE & DIZZINESS**

Balance is the ability to maintain one's body's orientation in space. It is an unconscious reflex. Dizziness is a feeling (conscious) of disorientation that can range in severity from lightheadedness to vertigo (a sense of motion or spinning senses: eyes (vision), inner ear (vestibular), and muscle tension). These senses send messages of one's body's orientation to the base of the brain (brain stem). The brain stem acts as an unconscious "computer" to analyze this information and relay balance reflex messages to muscles to maintain posture. This "computer" also sends messages to higher centers of the brain (cerebral cortex - temporal lobe) where one becomes consciously aware of balance or dizziness. The "computer" also integrates eye movements with head movements to maintain focus. Dizziness or imbalance occurs from a malfunction in one or more of the three balance senses (vision, vestibular, or proprioception) or in the "computer" that integrates these balance messages.

Rarely, temporal lobe cerebral cortex abnormalities are the cause of dizziness. Our balance depends on three senses: eyes (vision), inner ear (vestibular), and muscle tension (proprioception).

When evaluating a dizzy patient, the first goal is to determine where the balance problem is located. Once the site of balance abnormality is localized, the precise medical cause should be established before specific treatment recommended. Evaluation begins with a detailed history of the character of the dizziness as well as all related symptoms. Next, an otologic and neurotologic examination is performed. An ENG (electronystagmography) laboratory can be done to evaluate balance reflexes by measuring the connection between the balance system and the eyes while stimulating various aspects of balance. Subtle abnormalities in hearing are associated with many balance disorders. Often a complete audiogram and auditory brain stem response (ABR) and electrocochleography (EcoG) will be recommended. If laboratory tests suggest an inner ear or brain abnormality, an MRI scan may be required. Occasionally, platform posturography testing will be ordered.

The results of the history, physical examination, and laboratory tests are assimilated to determine the precise cause of dizziness. Successful treatment is dependent on accurate diagnosis. Common diseases that cause dizziness include:

1. Meniere's disease (excessive fluid pressure in the inner ear)
2. Perilymph fistula (a leak of inner ear fluid)
3. Benign positional vertigo ("floaters" in the inner ear)

4. Vestibular neuronitis (inflammation of the balance nerve)
5. Orthostatic dizziness (impaired circulation to the brain stem - "computer")
6. Basilar artery migraine (spasm of arteries supplying the "computer")

Besides the above, there are many other causes for dizziness. Nearly all of the diseases causing dizziness can be cured or controlled with modern medicine or surgery. Treatment is specific for each disease. The cornerstone of successful treatment is the correct diagnosis.