Cerebellar Lesions with Dizziness

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Provider Fact Sheet

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VESTIBULAR REHABILITATION SPECIAL INTEREST GROUP
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Cerebellar lesions can present either have a sudden or gradual onset of vertigo and imbalance. In either case, determining the presence of cerebellar involvement with or without peripheral vestibular hypofunction has important treatment implications. Individuals presenting to the emergency department (ED) with vertigo and imbalance should be tested for a cerebellar or brainstem stroke. A cerebellar stroke may not initially show up on a CT scan. If the history and other clinical findings are not consistent with benign paroxysmal positional vertigo (BPPV), peripheral vestibular neuritis, or vestibular migraine, a stroke should be considered. One way to differentiate between a stroke and a peripheral problem is the inability of the individual to coordinate his legs to walk. Another test is called HINTS (Head Impulse Nystagmus Test of Skew). If the head impulse test is negative or if there is direction changing nystagmus on eccentric gaze or there is skew deviation there is 100% sensitivity 96% specificity that a stroke has occurred. [1]

Anterior Inferior Cerebellar Artery (AICA) Stroke If the cerebellar stroke is related to a blockage or hemorrhage of the anterior inferior cerebellar artery (AICA), there is a possibility that the labyrinthine artery could be affected. The labyrinthine artery supplies the peripheral vestibular labyrinth causing both hearing loss and peripheral vestibular hypofunction on the same side of the stroke. These patients should be referred to a vestibular clinic so that testing can be performed and a PT specializing in vestibular dysfunction can treat these patients.

Cerebellar Degeneration Cerebellar degeneration is a progressive disease, which presents with an ataxic gait and imbalance. Subtypes may also affect both central and peripheral pathways and cause abnormalities in the vestibular ocular reflex (VOR) as well as oculomotor deficits.[2,3] Studies have shown there is a high risk of falls with injuries with this population and fall prevention therapy is strongly suggested.[4] MRIs can help locate the cite of damage and amount of cerebellar atrophy.

Clinical Tests and Measures to Identify Cerebellar Involvement
Cerebellar signs which can be found during a thorough oculomotor exam include spontaneous and direction changing gaze evoked nystagmus, smooth pursuit and saccade abnormalities, and the inability to suppress the vestibular ocular reflex (VOR cancellation).[5] Because of these deficits, many patients complain of double vision or blurring (oscillopsia) with walking or head movements, causing

dizziness and nausea. The scale physicians use for the assessment and rating of ataxia (SARA) can quantify impairments including gait, stance, sitting, speech, and coordination, but does not address oculomotor deficits.[5] Other tests that PTs should perform with this population include: Computerized Dynamic Posturography (CDP) or Clinical Test of Sensory Integration of Balance (mCTISB), DGI or FGA, and DVA.

Clinical Tests and Measures to Identify Peripheral Vestibular Involvement The head impulse test can be used to assess the unilateral or bilateral hypofunction. Diagnostic tests including bithermal caloric and rotary chair testing, performed in specialized dizziness and balance centers and ENT clinics, determine the degree of vestibular loss and amount of central compensation.[6]

Patient Prognosis Even though patients with cerebellar involvement require more physical therapy visits than those with peripheral vestibular loss, these patients can benefit from vestibular rehabilitation.[7,8,9] Vestibular therapists can evaluate, establish functional goals, begin appropriate treatment interventions, and achieve the best outcome possible if these patients are referred promptly after diagnosis.

Physical Therapy Interventions Physical therapy treatments that promote sensory integration and postural control are critical for this population.[10,11] If peripheral vestibular hypofunction is identified, gaze stabilization exercises are prescribed to improve the gain of the Vestibular Ocular Reflex (VOR).[12] Even if there is no peripheral vestibular loss, the patients with oculomotor deficits causing dizziness can benefit from vestibular habituation exercises to decrease motion and visually provoked dizziness.

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