

Localizing cerebellar eye movement disorders: video examples



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An intact cerebellum is a prerequisite for optimal ocular motor performance. The cerebellum fine-tunes each of the subtypes of eye movements so they work together to bring and maintain images of objects of interest on the fovea. I will review the major aspects of the contributions of the cerebellum to ocular motor control. We will use structural-functional correlation, combining the effects of lesions and the results from physiologic studies, with the emphasis on the cerebellar regions known to be most closely related to ocular motor function: 1) the flocculus/paraflocculus for high-frequency (brief) vestibular responses, sustained pursuit eye movements and gazeholding. Abnormalities include gaze-evoked, downbeat and rebound nystagmus as well as impaired pursuit and VOR suppression. 2) the nodulus/ventral uvula for low-frequency (sustained) vestibular responses. Abnormalities include positional nystagmus, periodic alternating nystagmus, ocular tilt reaction, impaired tilt suppression of post-rotatory nystagmus 3) the dorsal oculomotor vermis and its target in the posterior portion of the fastigial nucleus (the fastigial oculomotor region) for saccades and pursuit initiation. Abnormalities include saccade hypometria (vermis lesions), saccade hypermetria and macrosaccadic oscillations (fastigial lesions). Using these anatomical principles we will show video clips of patients with cerebellar disorders reflecting this anatomical organization so as to optimize cerebellar localization and diagnosis.
