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Abnormal eye movements in PICA infarction

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The cerebellum is supplied by the two vertebral arteries and the basilar artery. The PICA, the largest branch emerging from the vertebral artery, irrigates the posterior and caudal part of the cerebellum. The medial PICA supplies the inferior vermis, the inferior part of the inferior semilunar lobule, gracilis lobule, and tonsil. The lateral PICA irrigates the inferior parts of the biventer lobule, the inferior semilunar and gracilis lobules, and the ventrolateral part of the tonsil. The dorsal medullary area including vestibular nuclei and the restiform body is vascularized by the PICA. PICA infarction, especially the medial PICA may be presented isolated acute vestibular syndrome without cerebellar or focal neurologic signs. PICA infarction may be observed spontaneous nystagmus (pseudovestibular neuritis), mostly ipsilesional in unilateral infarctions. A negative head impulse test is most useful in differentiating PICA cerebellar infarctions from acute peripheral vestibular disorders. Direction-change gaze-evoked, perverted head shaking, positional downbeat nystagmus can be found in patients with cerebellar infarction. Eye findings of isolated nodular infarction include ipsilesional nystagmus(mimicking peripheral vestibulopathy), periodic alternating nystagmus, perverted HSN, paroxysmal positional nystagmus, and impaired tilt suppression of postrotatory nystagmus. A patient with isolated unilateral infarction of cerebellar tonsil showed a small ipsilesional spontaneous nystagmus only without fixation, horizontal gaze-evoked and rebound nystagmus, small contraversive tilt of the subjective visual vertical(SVV), and profound loss of smooth pursuit.

Key Words: Nystagmus, Cerebellum, PICA syndrome

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