Teaching NeuroImage: One-and-a-half syndrome

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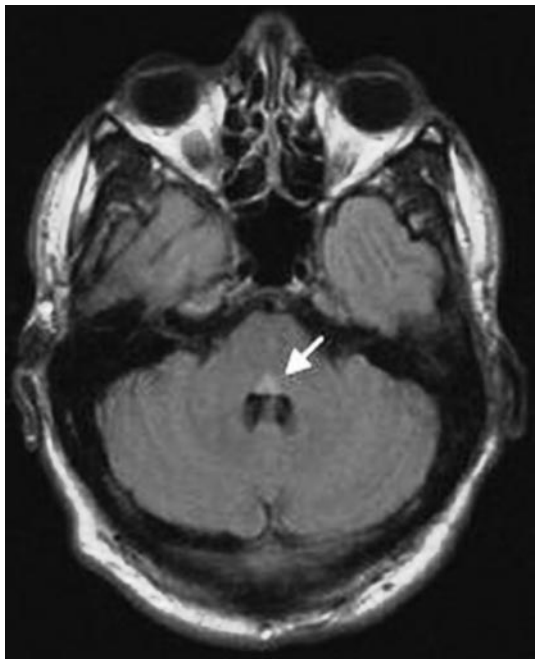
A 28-year-old right-handed man with no medical history presented with sudden onset of double vision. The patient stated that the double vision was worse when looking to the right, and he was not able to move his eyes to the left. On examination, the patient had a conjugate gaze palsy to the left and impaired adduction in the left eye (video), which persisted during saccades, pursuit, and oculocephalic movements. Vertical eye movements were normal, and no ocular bobbing was observed. MRI showed multiple periventricular white matter lesions and a central lesion in the pontine tegmentum (figure).

One-and-a-half syndrome is a gaze abnormality characterized by a conjugate horizontal gaze palsy in one direction plus an internuclear ophthalmoplegia in the other.[1] The syndrome is usually caused by a single unilateral lesion of the paramedian pontine reticular formation or the abducens nucleus on one side (causing the conjugate gaze palsy to the side of the lesion), with interruption of internuclear fibers of the ipsilateral medial longitudinal fasciculus after it has crossed the midline from its site of origin in the contralateral abducens nucleus (causing failure of adduction of the ipsilateral eye).[1] One-and-a-half syndrome is most often caused by multiple sclerosis (MS), brain stem stroke, brain stem tumors, and arteriovenous malformations.[1] This patient was diagnosed with MS in accordance with the McDonald Criteria for MS.[2]

Figure Fluid-attenuated inversion recovery sequence MRI of the brainstem showing a multiple sclerosis plaque in the tegmentum of the pons (white arrow)



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