Teaching Video NeuroImage: Reverse Ocular Bobbing as a Presenting Feature of Brainstem Cavernoma

Kavindra Singh, MBBS, MS, MCh, and Pravin Salunke, MBBS, MS, MCh

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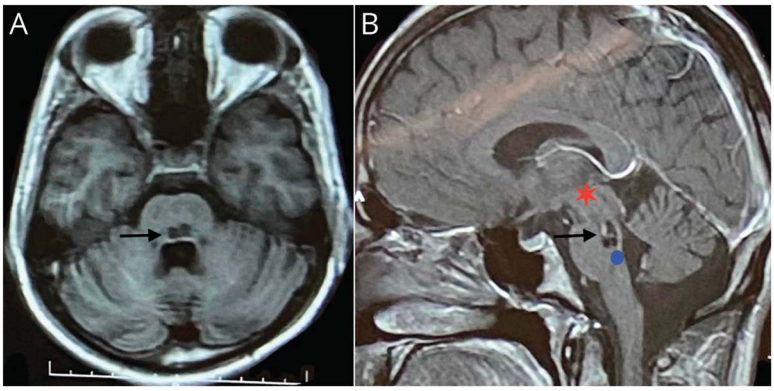
Correspondence
Dr. Singh
singh.kavindra8@gmail.com

Figure Axial and Sagittal MRIs Delineating a Dorsal Pontine Cavernoma



(A) T1-weighted axial MRI sequence showing a hypointense lesion in dorsal pons (marked with black arrow). (B) T1W+C sagittal MRI sequence depicting a lesion (marked with black arrow) with faint contrast enhancement at dorsal pontomesencephalic junction. Red star represents riMLF, which has the excitatory burst neurons for vertical saccades, and blue circle at dorsal pons approximates location of omnipause cells lying in the nucleus raphe interpositus, which is located in the midline at the level of abducens nucleus. The connections between riMLF and omnipause neurons are damaged leading to reverse bobbing. riMLF = rostral interstitial nucleus of the medial longitudinal fasciculus.

A 21-year-old man presented with oscilopsia, repetitive eye blinking, and headache for 20 days. He had intact vision with normal pupillary reaction. Although the horizontal and vertical gazes were intact, there were abnormal conjugate vertical movements with quick up phase followed by slow return to midposition suggestive of reverse ocular bobbing (Video 1). Bobbing was present in all directions of gaze and was associated with synkinetic lid movements. Imaging suggested a dorsal pontine cavernoma (Figure). The patient opted for radiosurgery. Omnipause neurons in dorsal pons tonically inhibit the rostral interstitial nucleus of the medial longitudinal fasciculus burst neurons (center for vertical saccades) which also indirectly stimulates levator subnucleus.[1] Damage to omnipause neurons or connections may cause reverse ocular bobbing with synkinetic lid movements. Unlike ocular bobbing, the horizontal gaze is intact because of uninvolved paramedian pontine reticular formation.[2] Interestingly, reverse ocular bobbing has been previously reported in cases of metabolic encephalopathy but is rarely associated with a structural lesion.

MORE ONLINE

Video

Teaching slides
http://links.lww.com/WNL/C579

Author Contributions

K. Singh: drafting/revision of the manuscript for content, including medical writing for content; major role in the acquisition of data. P. Salunke: drafting/revision of the manuscript

From the Department of Neurosurgery, Post Graduate Institute of Medical Education and Research, Chandigarh, India.

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