Teaching NeuroImages: Upright-supine test to evaluate vertical diplopia

A 36-year-old woman presented with vertical diplopia, nausea, and disequilibrium. Maddox rod testing was performed in the upright and supine positions (figures 1 and 2).

Skew deviation is a vertical misalignment caused by a supranuclear lesion in the vertical vestibulo-ocular reflex pathways, including the vestibular nerve, brainstem, or cerebellum. It arises from perturbed utricular inputs, and the amplitude of the ocular deviation is therefore sensitive to gravitational forces.\(^1\) The upright-supine test helps localize the cause of vertical diplopia by distinguishing skew deviation from infranuclear causes.\(^2\) With skew deviation, the vertical deviation is substantially reduced when the patient is supine, whereas with infranuclear lesions it is not.

AUTHOR CONTRIBUTIONS
Nailyn Rasool: drafting/revising the manuscript, study concept or design, analysis or interpretation of data, accepts responsibility for conduct of research and final approval. Sashank Prasad: drafting/revising the manuscript, study concept or design, analysis or interpretation of data, accepts responsibility for conduct of research and final approval, study supervision.

Figure 1  Upright-supine test

During Maddox rod testing, the patient used her fingers to demonstrate the separation of images. The vertical deviation decreased substantially (over 50%) when supine compared to upright.

Figure 2  MRI brain (axial fluid-attenuated inversion recovery)

Axial fluid-attenuated inversion recovery MRI demonstrates heterogeneous hyperintensity with a rim of hypointensity, suggestive of a cavernous malformation in the left middle cerebellar peduncle.
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REFERENCES
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