Teaching *NeuroImages*: Upright-supine test to evaluate vertical diplopia

Nailyn Rasool, MD
Sashank Prasad, MD

Correspondence to
Dr. Rasool:
nailyn.rasool@gmail.com

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.

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 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.

Download teaching slides:
Neurology.org

From Massachusetts Eye and Ear Infirmary (N.R.) and Brigham and Women's Hospital (N.R., S.P.), Harvard Medical School, Boston, MA. Go to Neurology.org for full disclosures. Funding information and disclosures deemed relevant by the authors, if any, are provided at the end of the article.

STUDY FUNDING

No targeted funding reported.

DISCLOSURE

The authors report no disclosures relevant to the manuscript. Go to Neurology.org for full disclosures.

REFERENCES

1. Suzuki JI, Tokumasu K, Goto K. Eye movements from single utricular nerve stimulation in the cat. *Acta Otolaryngol* 1969;68:350–362.
2. Wong AM, Colpa L, Chandrakumar M. Ability of an upright-supine test to differentiate skew deviation from other vertical strabismus causes. *Arch Ophthalmol* 2011;129:1570–1575.

Neurology®

Teaching *NeuroImages*: Upright-supine test to evaluate vertical diplopia

Nailyn Rasool and Sashank Prasad

Neurology 2015;84:e153-e154

DOI 10.1212/WNL.0000000000001569

This information is current as of May 11, 2015

Updated Information & Services	including high resolution figures, can be found at: http://n.neurology.org/content/84/19/e153.full
Supplementary Material	Supplementary material can be found at: http://n.neurology.org/content/suppl/2015/05/09/WNL.0000000000001569.DC1
References	This article cites 2 articles, 0 of which you can access for free at: http://n.neurology.org/content/84/19/e153.full#ref-list-1
Subspecialty Collections	This article, along with others on similar topics, appears in the following collection(s): All Clinical Neurology http://n.neurology.org/cgi/collection/all_clinical_neurology All Neuro-ophthalmology http://n.neurology.org/cgi/collection/all_neuroophthalmology Arteriovenous malformation http://n.neurology.org/cgi/collection/arteriovenous_malformation Diplopia (double vision) http://n.neurology.org/cgi/collection/diplopia_double_vision Ocular motility http://n.neurology.org/cgi/collection/ocular_motility
Permissions & Licensing	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: http://www.neurology.org/about/about_the_journal#permissions
Reprints	Information about ordering reprints can be found online: http://n.neurology.org/subscribers/advertise

Neurology® is the official journal of the American Academy of Neurology. Published continuously since 1951, it is now a weekly with 48 issues per year. Copyright © 2015 American Academy of Neurology. All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.