

Vertebrobasilar Insufficiency Test

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A test to rule in [vertebrobasilar insufficiency \(VBI\)](#)

1 When should you screen?

According to Dutton (2020)¹, there is a low risk of iatrogenic stroke when applying passive therapeutic maneuvers to the cervical spine¹. Thus this passive screening as well as AROM screening is recommended prior to any therapeutic maneuver, especially cervical HVLATs¹.

2 Technique

- Begin with patient sitting
- Instruct the patient to rotate the head to each side¹

i Note

If the patient becomes dizzy during rotation; it is sometimes possible to implicate or exclude the vestibular apparatus of the inner ear as the source of dizziness. Simply have the patient stand and perform relative end-range head rotation by turning

their body while the clinician holds the head steady¹. Since this is relative head rotation, the semicircular canals are not disturbed and if the patients symptoms are recreated then you can rule out vestibular involvement¹.

2.1 9 factors to consider during testing

1. Inherent redundancy of blood supply—collateral circulation¹
2. Morphology of the vertebral artery at the atlantoaxial level
3. Biomechanics of upper cervical spine—concurrent contralateral side bending with cervical rotation¹
4. The nonvascular causes of dizziness (cervicogenic dizziness and benign paroxysmal positional vertigo)¹
5. The amount of cervical rotation to be used¹
6. Medical history (transient ischemic attack, cerebrovascular accident, cardiac risk factors, cervical spondylosis)¹
7. Psychometric properties of vertebral artery testing (0% sensitivity)¹
8. Force to be applied 9. Potential risk of injury with manipulation (thrust, rotational techniques vs. nonthrust, nonrotational techniques)¹

2.2 Grading

A positive VA test is one in which signs or symptoms change¹. Even subtle changes such as a significant delay in verbal responses to questions of orientation with some inconsistency of answers, changes in pupil size, and nystagmus are all considered positive VBI tests¹.

3 What to do after a Positive result?

Patients who demonstrate symptoms associated with VBI should be referred to the PCP for further investigation¹.

In theory, a clinician should even refer patients with a negative subjective history and negative findings with the initial test for additional passive physical examination (stress tests) of the vertebrobasilar system to further assess the potential for VBI, but this is not always practical¹.

3.1 What if I still want to perform a cervical mobilization?

First, you should opt for a grade I-IV mob rather than a grade V thrust technique¹. One should follow the Australian Physiotherapy Association's Protocol for Premanipulative Testing of the Cervical Spine (although this cannot be viewed as a prescriptive guideline)¹.

- Australian Physiotherapy Association's Protocol recommends that the clinician should maintain the immediate premobilization position for ≥ 10 sec to test the patency of the vertebrobasilar system¹.
- Clinical testing for VBI should stop once (+) signs or symptoms are noted¹.
- Throughout the tests, one should observe for possible nystagmus or changes in pupil size and should have the patient count backward to assess his or her quality of speech¹.
- The patient should be instructed to report any changes in symptoms (even seemingly insignificant changes)¹.

Caution

The sensitivity of these premanipulative protocols are unclear¹. Multiple studies have found these protocols to have a poor prediction values¹.

Although one could argue that if the VA was damaged or compromised, the patient would surely have signs and/or symptoms indicating this, the logical question still becomes, "How does one proceed in the absence of certainty?"³³ It would seem extremely prudent to avoid cervical thrust techniques on a patient with any degree of uncertainty. Even in the absence of any symptoms, it would be wise to either introduce the application of incrementally greater movements and loads or investigate VA flow using Doppler sonography or an magnetic resonance arthrogram (MRA) scan before performing a grade V technique in the cervical spine.³⁶ In addition to the specific tests of blood flow, the clinician should use a combination of the patient's description of the symptoms and medical history, and those considerations in Table 24-1, before reaching a conclusion.³⁷ Alternatively, the clinician should consider avoiding placing the patient's cervical spine in the extremes of rotation and side bending in both the examination and the subsequent intervention, which would obviate the need for these tests.

1. Dutton M. *Dutton's Orthopaedic Examination, Evaluation, and Intervention*. Fifth edition. McGraw Hill Education; 2020.