Vertebral arteries and cervical movement: Doppler ultrasound velocimetry for screening before manipulation.

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OBJECTIVE: It has been proposed that Doppler velocimetry, which is noninvasive, quick, and relatively inexpensive, should be used when the screening vertebral arteries before manipulation to reduce the risk of cervical manipulation-related injury to these vessels. The objective of this analysis of the literature is to study the evidence of the suitability of Doppler velocimetry for this purpose. Data Selection: Studies were examined that dealt with the incidence of stroke after manipulation, the proposed mechanisms for this clinical entity, the validity of the provocational tests that have been used in screening before manipulation, the validity and reliability of Doppler velocimetry of vertebral arteries, and the biomechanics of vertebral arteries.

RESULTS: There is a suspicion of increased risk for vertebrobasilar stroke for vertebral arteries that have markedly reduced patency in the neutral position and/or stenosis during cervical rotation. There is evidence that provocational tests lack validity and that Doppler velocimetry is valid in assessing the patency of vertebral arteries in the neutral position and during cervical rotation. Interexaminer reliability of the Doppler technique has been shown to be high. Doppler ultrasound screening also seems to be able to provide an indirect assessment of the mechanical stresses to the artery during cervical movements. CONCLUSION: There is strong evidence to suggest that Doppler velocimetry should be included in the screening of vertebral arteries before manipulation.

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