Color duplex sonographic findings in human vertebral arteries during cervical rotation.

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PURPOSE: The aims of this study were to determine whether vertebral artery blood flow velocity changes during contralateral cervical rotation, to determine the extent of rotation necessary to affect the velocity, and to find direct evidence of stretching or compression of the vertebral arteries during cervical rotation. METHODS: Color duplex sonography was used to measure the blood flow velocities and diameters of the vertebral arteries in 20 patients. Measurements were taken with the patients' heads in the neutral position and at 10 degrees increments of contralateral neck rotation (determined using a cervical range of motion goniometer) to the end-range. RESULTS: The data showed no significant change in the mean blood flow velocity for the entire study population during cervical rotation. However, there were marked changes in the blood flow velocities in 7 vertebral arteries toward the end-range of rotation. No arteries displayed any evidence of major stretching of the arterial walls, although localized compression of 2 arteries was observed. CONCLUSIONS: The results of this study suggest that vertebral arteries are usually unaffected by contralateral cervical rotation and that Doppler sonography may provide an indirect assessment of mechanical stresses to the arterial wall. Copyright 2000 John Wiley & Sons, Inc. 29:14-24, 2001.