

# Accuracy of contrast-enhanced MDCT and MRI for identifying the severity and cause of neural foraminal stenosis in cervical radiculopathy: a prospective study.

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Date: 2010

## Abstract:

**OBJECTIVE:** The purpose of this study was to determine the accuracy of IV contrast-enhanced MDCT and MRI for evaluation of the severity and cause of neural foraminal stenosis in patients with cervical radiculopathy. **SUBJECTS AND METHODS:** Eighteen patients with cervical radiculopathy prospectively underwent contrast-enhanced MDCT and MRI. Contrast-enhanced MDCT scans were acquired at 1-mm thickness and reconstructed in oblique axial (parallel to disk) and sagittal (perpendicular to neural foramen) 2-mm sections without a gap. The MRI sequences used were sagittal T1-weighted, fast spin-echo T2-weighted, 3D fast spin-echo T2-weighted, axial T2-weighted, and 3D gradient-recalled echo. Three neuroradiologists independently and blindly rated the severity and cause of neural foraminal stenosis on a 4-point scale. Using the same scale at surgery, one of three surgeons rated the severity and cause of neural foraminal stenosis, and the results were used as the reference standard. Interobserver and intraobserver agreement (kappa) was calculated. **RESULTS:** For severity of neural foraminal stenosis, the sensitivities of contrast-enhanced MDCT (50/55, 91%) and MRI (55/57, 96%) were similar, as were their specificities (contrast-enhanced MDCT, 13/24, 54%; MRI, 11/24, 46%). For cause of neural foraminal stenosis, the accuracies of contrast-enhanced MDCT (46/54, 85%) and MRI (45/57, 79%) were similar. Interobserver agreement on severity of neural foraminal stenosis was moderate to almost perfect for contrast-enhanced MDCT (kappa=0.50-1.00) and MRI (kappa=0.43-1.00). For cause of neural foraminal stenosis, interobserver agreement was moderate to substantial for contrast-enhanced MDCT (kappa=0.52-0.76) but only fair for MRI (kappa=0.23-0.39). Intra observer agreement was very high for severity of neural foraminal stenosis (contrast-enhanced MDCT, kappa=0.85; MRI, kappa=0.80) and cause of neural foraminal stenosis (contrast-enhanced MDCT, kappa=0.86; MRI, kappa=1.00). **CONCLUSION:** Contrast-enhanced MDCT is as accurate as MRI in evaluation of the severity and cause of neural foraminal stenosis and may have better interobserver agreement.