

Abstract #1284.docx

RELIABILITY OF MRI FOR THE PREOPERATIVE ASSESSMENT OF COMPRESSION STATUS AT C6/7 DISC LEVEL

Introduction: Proper evaluation of stenosis at C6/7 disc level is important for the surgical treatment of cervical spondylotic myelopathy (CSM), since C6/7 is usually planned as the caudal end of decompression. MRI, as a noninvasive assessment tool, is generally used to decide the extent of the decompression zone, however, MRI obtained at the supine position can provide only a static image. To assess the reliability of MRI for detecting the compression status at C6/7, we compared the findings by MRI with myelography in CSM patients.

Materials and Methods: The preoperative conditions at C6/7 in consecutive 250 CSM patients treated with laminoplasty were classified into "compression" or "no compression" by both MRI and myelography. In T2-weighted sagittal MRI, the C6/7 level without any subarachnoid space due to stenosis was classified as "compression". In myelography, the blockade or the defect of contrast medium at C6/7 was classified also as "compression". Additionally, the cross-sectional shapes of subarachnoid space at C6/7 on T2-weighted axial MRI were classified into "round-shape" or "funnel-shape" according to the extent of hypertrophic yellow ligaments.

Results: "Compression" was shown in 59 patients (23.6%) on sagittal MRI, whereas more often in 133 patients (53.2%) on myelography ($p < 0.01$). The false negative "compression" on sagittal MRI was 59.3%: Seventy-nine of 133 patients with "compression" by myelography presented "no compression" on sagittal MRI. On axial MRI, the "round-shape" was observed in 107 patients (42.8%) and the "funnel-shape" was observed in 143 patients (57.2%). Among 191 patients with "no compression" on sagittal MRI, "compression" by myelography was observed in 66 of 100 "funnel-shape" patients (66.0%) and in only thirteen of 91 "round-shape" patients (14.2%) ($p < 0.01$), which indicated the false negative ratio as 9.7%.

Conclusion: The high false negative "compression" ratio revealed the inaccuracy of sagittal MRI to evaluate the stenosis at C6/7. While, this ratio significantly decreased to 9.7% by the findings on axial MRI. Furthermore, 66.0% of "funnel-shape" even with "no compression" at sagittal MRI showed "compression" on myelography. These results indicated high reliability of axial view of MRI to evaluate the condition at C6/7 as well as myelography.