

## A novel diagnostic examination of the lumbar adhesion arachnoiditis by MRI scanning in supine and prone positions

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### Purpose

A lumbar adhesive arachnoiditis (LAA) progresses neuropathic pain many years after suspected causative events, and it seems misdiagnosed in some cases. It is considered that LAA patients lose mobility of nerve roots in the dural sac, however, its clinical diagnosis is quite difficult because it has no distinct signs and symptoms. The purpose of this study is to develop a higher-sensitivity screening and detection technique of LAA, using the MRI scan.

### Method

Thirty patients with chronic lumbar and leg pain participated in this study. Fifteen patients had one or more of the risk factors for LAA which include spinal surgeries or past history of intrathecal oil-based contrast-media or local anesthetic injection (high-risk group), and other 15 patients had no risk factor (nonrisk group). They had a MRI examination (T2WI-axial-view), both in supine and prone positions. We measured the proportion of the low intensity area (ie, nerve roots) in the down half of the dural sac to the whole area of the down half of the dural sac at arbitrary 10 spinal levels from L2 to L5/S. To evaluate the intrathecal mobility of the nerve roots, we calculated the rate of change between supine and prone positions. Using the two-way repeated measure ANOVA, we compared the mobility at each spinal level between the two groups.

### Results

We found that, regardless of the positions, the proportion of the low intensity areas were significantly smaller at several spinal levels in the high-risk group than that in the nonrisk cases ( $P < .05$ ). Furthermore we found the significant interaction that change of the proportion between the two positions was smaller in the high-risk group at L2, L3, L3/4, L4/5, and L5 middle level ( $P < .05$ ).

### Conclusions

Our findings clearly indicate the high-risk group for lumbar adhesion arachnoiditis loses the mobility of nerve root in the dural sac. These suggest that MRI examination both in supine and prone positions would screen lumbar adhesion arachnoiditis sensitively.