Cervical degenerative disease at flexion and extension MR imaging: prediction criteria

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摘要

Abstract

PURPOSE: To determine if there are any neutral-position imaging criteria that can help predict functional cord impingement at flexion-extension cervical magnetic resonance (MR) imaging. MATERIALS AND METHODS: Sixty-two patients with cervical degenerative disease were evaluated with regard to the dynamic changes of canal stenosis at flexion-extension MR imaging. Functional cord impingement was considered if the cord was impinged or more impinged after neck flexion or extension. Selection criteria for neutral-position MR imaging, such as cervical curvature, canal space, degenerative stage, intramedullary high signal intensity on T2-weighted images, and resting instability, were evaluated for their ability to predict functional cord impingement at flexion-extension MR imaging (Fisher exact test, logistic regression analysis). RESULTS: MR images in 19 (31%) of 62 patients showed functional cord impingement at extension MR imaging compared with images in two (3%) patients at flexion MR imaging. Statistically significant differences were found for the criteria cervical degeneration stage (P <.001) and spinal canal space (P =.037) for predicting functional cord impingement at extension MR imaging. In contrast, no significant differences were found among selection criteria for flexion MR imaging. Probabilities of functional cord impingement at extension MR imaging were calculated with different combinations of degenerative stages and canal spaces. Probability could increase to 79% if the patient had both stabilization degeneration (disk protrusion or osteophytic formation with hypertrophy of the ligamentum flavum) and C7 canal space of 10 mm or less. CONCLUSION: None of the selection criteria evaluated in this study has the ability to predict functional cord impingement at flexion MR imaging; however, prediction of impingement at extension MR imaging can increase from 31% to 79% if proper criteria are selected