Agreement of electro diagnosis, clinical findings and MRI in patients with low back pain

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Background and Purpose: Disc herniation leading to radiculopathy is one of the important differential diagnoses of low back pain which needs specific medical care. Radiculopathies can be initially diagnosed by history taking and physical examination. However role of other diagnostic methods like Magnetic resonance imaging (MRI) and Electromyography (EMG) in narrowing differential diagnosis is warranted when clinical data are inconsistent or inadequate. In this study we evaluated level of agreements among three methods of radiculopathy diagnosis including EMG, MRI and physical exam.

Methods: This study is a comparative cross sectional study on 384 patients which was performed among patients who were referred to electro diagnosis center for their back pain. Results from 3 questionnaires that filled by neurosurgeon for clinical results, radiologist for MRI findings and neurologist for electro diagnosis findings were psychometrically analyzed using Kappa index for agreement among three methods.

Results: From the 384 cases studied, MRI were successful in 90.6% (348 cases) to identify radiculopathy and EMG and clinic with 76.6% (295 cases) and 70.5% (286 patients), respectively. EMG and MRI have agreed in 76.8% of cases in the diagnosis of radiculopathy. MRI and clinical data in 69.7% of cases (Pvalue<0.940) and EMG and clinical data in 62.7% of cases (Pvalue<0.843) have agreed but they were not statistically significant.

Conclusion: Study results show that MRI is the best diagnostic tool for evaluating the presence of radiculopathy but EMG could also be used instead of MRI in radiculopathy diagnosis. Since EMG is more invasive than MRI, EMG is better to be considered as a second diagnostic tool.

Keywords: Electrodagnosis; Physical Examination; Back Pain; Magnetic Resonance Imaging