How often is low back pain or sciatica not due to lumbar disc disease?

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ABSTRACT

Objective: To determine the percentage of low back pain or sciatica referred for MRI in which the main abnormality was not disc disease.

Methods: This is a retrospective study of 634 consecutive lumbar spine MRI’s in patients with low back pain or sciatica performed over 6-month period (January to June 2002). The study was conducted at the University Hospital of King Abdul-Aziz University, Jeddah, Kingdom of Saudi Arabia. All patients were scanned on a 1.5-T MRI system. The examination included T-1 weighted sagittal images and proton density and T-2 weighted sagittal and axial images. Contrast enhanced images were obtained selectively.

Results: Nine patients were eliminated because they were being followed for a known diagnosis, leaving 625 patients in the study group. Of these, 11 patients (1.7%) had a new diagnosis of metastatic disease to the bony spine, 7 of which (1.1%) had a known primary and 4 of which (0.6%) had no known primary malignancy. Two patients (0.3%) had spinal tumors: one conus ependymoma and one schwannoma. Four patients had non-neoplastic causes of low back pain including syringomyelia, discitis, spondylolisthesis, and an osteoporotic compression fracture. In all, 17 of 625 patients (2.7%) had a new diagnosis of a treatable cause of low back pain or sciatica other than disc disease.

Conclusion: In patients with low back pain or radiculopathy, 2.7% have significant pathologies other than disc disease.

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As a result of current financial restraints, some medical care organizations and insurance agencies may tend to stop authorizing surgery for lumbar disc disease, citing the comparable outcomes for surgical versus non-surgical management after one year.1,2 This may also stop authorizing MRI studies for presumed lumbar disc disease. Although this policy may help in reducing the immediate health care expenditure, it will fail to detect patients with low back pain in whom the pain is due to significant pathology other than disc disease. This study was performed to determine the percentage of patients with low back pain or sciatica in which the primary diagnosis was other than disc disease.

Methods. A retrospective review of 634 consecutive lumbar spine MRI studies, including 53% women and 47% men, age range 32-67 years (mean 53 years), was performed over a 6-month period from January to June 2002 in all patients referred for evaluation of sciatica or low back pain at the University Hospital of King Abdul-Aziz University, Jeddah, Kingdom of Saudi Arabia. All cases were referred from neurology, neurosurgery and orthopedic specialty clinics. To simulate the actual daily MRI practice, only the clinical information written on the MRI request form was used as the inclusion criteria. Further medical history and clinical findings were not pursued. The

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We studied a large group of patients with MRI findings suggestive of non-discogenic etiology of low back pain. Our results show a significant incidence of non-discogenic pathology in patients with low back pain. This emphasizes the importance of performing spinal MRI for patients with persisting symptoms after a trial of proper conservative therapy. Jinkins et al studied the anatomic basis of vertebrogenic pain and autonomic syndromes associated with lumbar disc extrusion. They clearly illustrated that irritation of the recurrent meningeal nerve results in conduction of somatic pain to the lumbar sacral zone of head.

**Results.** Nine patients were eliminated from the study because they were being followed for a known diagnosis unrelated to disc disease. The final study group consisted of 625 patients. Seventeen patients (2.7%) had a primary diagnosis unrelated to disc degeneration. Thirteen patients (2.1%) had a completely normal MRI examination.

The rest of the patients (95.2%) had variable degrees of disc degenerative changes. Of the 17 patients with the new diagnosis of non-discogenic disease, 0.6% had non-neoplastic causes of low back pain including an osteoporotic compression fracture, a discitis (Figure 1), spondylolisthesis, and syringomyelia. A new diagnosis of metastatic disease to the bony spine was made in 11 patients (1.7%) of which 7 (1.1%) had a known primary without clinical suspicion of metastasis, and 4 (0.6%) had no known primary (Figure 2). Two patients (0.3%) had primary tumors (a conus ependymoma and a nerve root schwannoma). None of the patients composing the 2.7% population had an associated disc or facet degenerative disease.

**Discussion.** Back pain is the second leading reason for visits to physicians and is considered the major cause of work-related disability. It represents a major financial burden on health care systems. Diagnosis of the etiology of low back pain is a difficult clinical challenge since the pain is usually multifactorial and the patient’s complaint is often vague. The physical examination is non-specific, and a definitive underlying cause of back pain is often not identified. Approximately 85% of patients with low back pain cannot be given a specific diagnosis from clinical examination alone.
Figure 1 - A 52-year-old man with history of low back pain of 3 weeks duration. a) Sagittal T1 weighted image (TR/TE=500/8). The L2-L3 disc space and the surrounding end plates are poorly visualized. b) Sagittal T2 weighted image (TR/TE=3000/98) demonstrate abnormal increased signal intensity within the disc space and the surrounding end plates. c) Sagittal contrast enhanced T1 weighted image (TR/TE=500/8) demonstrates abnormal enhancement of the disc space and the surrounding end plates. The end plates show significant surface irregularity. These findings are consistent with discitis. Biopsy was not obtained. The patient subsequently improved on antibiotics without biopsy.

Figure 2 - A 61-year-old man with dull low back pain of 2 months duration. a) Sagittal T1 weighted image (TR/TE=500/15) demonstrates diffuse low signal intensity of the L4 vertebral body marrow indicating complete replacement with an infiltrative process. b) Sagittal T2 weighted image (TR/TE=3100/84) demonstrates the abnormal increased signal intensity of the L4 vertebral body marrow. On biopsy this was found to be a metastasis from an unknown primary adenocarcinoma.
MRI characteristics that would limit their differential diagnosis (for example diskitis and metastasis). We also acknowledge that disc disease may be present in asymptomatic patients while symptoms in patients with disc abnormalities may not relate to the visualized degenerated disc and vice versa.

In conclusion, 2.7% of patients with low back pain, sciatica or both, have significant pathologies other than disc disease. Spinal MRI is crucial for diagnosing these cases.

References

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