

Diagnosis

In patients with sciatica, MRI at 1 year did not differentiate between a favorable or unfavorable outcome

el Barzouhi A, Vleggeert-Lankamp CL, Lycklama à Nijeholt GJ, et al; Leiden–The Hague Spine Intervention Prognostic Study Group. *Magnetic resonance imaging in follow-up assessment of sciatica.* *N Engl J Med.* 2013;368:999–1007.

Clinical impact rating:  ★★★★★☆

Question

Can magnetic resonance imaging (MRI) at 1 year distinguish between a favorable or unfavorable outcome in patients with sciatica treated with surgery or 6 months of conservative care followed by surgery as needed?

Methods

Design: Blinded comparison of MRI scans with patient outcomes at 1 year after enrollment in the Sciatica Trial. Controlled Clinical Trials ISRCTN26872154.

Setting: 9 hospitals in the Netherlands.

Patients: 267 patients (mean age 42 y, 67% men) who had sciatica for 6 to 12 weeks and confirmed disc herniation (dermatomal pain region correlated with the same affected nerve root identified on MRI) at enrollment in the randomized Sciatica Trial and follow-up MRI at 1 year. Patients were randomized to early surgery ($n = 131$) or prolonged conservative care for 6 months followed by surgery as needed ($n = 136$). Results of the randomized comparison are not reported here.

Description of test: MRI of the lumbar spine at 1 year. Disc contour for the most severe nerve-root compression was categorized as disc herniation, bulging disc, or normal disc. MRI was scored on a 4-point scale (1 = definite presence, 2 = probable presence, 3 = possible presence, and 4 = definite absence) for disc herniation and root compression.

Diagnostic standard: 7-point, Likert, self-rated, global perceived recovery scale {from “complete recovery” to “worse,” lower scores represent recovery}* at 1 year. A favorable outcome was defined as complete or nearly complete disappearance of symptoms.

Outcomes: Sensitivity, specificity, likelihood ratios, and area under the receiver-operating characteristic curve (AUC) for detection of patients with a favorable outcome.

Main results

84% of patients had a favorable outcome at 1 year. Diagnostic test characteristics of MRI features at 1 year are in the Table. The AUC for detecting patients with a favorable outcome was 0.48 (95% CI 0.39 to 0.58) for MRI-assessed herniated disc and 0.52 (CI 0.42 to 0.61) for MRI-assessed nerve compression, indicating that MRI provided no discrimination between favorable and unfavorable outcomes.

Conclusion

In patients with sciatica, magnetic resonance imaging findings at 1 year did not distinguish between patients with a favorable or unfavorable outcome.

*Peul WC, van Houwelingen HC, van den Hout WB, et al; Leiden–The Hague Spine Intervention Prognostic Study Group. *Surgery versus prolonged conservative treatment for sciatica.* *N Engl J Med.* 2007;356:2245–56.

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Commentary

The carefully conducted and methodologically rigorous study by el Barzouhi and colleagues reports on the accuracy of MRI in distinguishing between patients with favorable or unfavorable outcomes after surgical or conservative treatment for sciatica.

Consistent with the literature on MRI and back pain (1), the study found that imaging results were not helpful and have limited implications for clinical decision-making for patients with sciatica. The study examined imaging after treatment, and therefore did not report on the reliability of using these images in selecting patients for surgery at the onset of pain or disability. Because the study did not find an association between follow-up imaging and outcomes, it does establish that MRI findings would not be helpful for deciding the optimal treatment in patients with symptoms after surgery or prolonged conservative treatment and observation. Visible scar tissue after surgery was also not associated with clinical outcomes. Visible scar tissue, disc herniation, or nerve-root compression were not useful in discriminating between those with good or poor outcomes in postsurgical patients with continuing sciatica. In sum, the role of MRI in patients with sciatica seems best limited to assisting surgeons with operative planning in those who have already been selected, on the basis of other considerations, for surgery.

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Reference

1. Deyo RA. Real help and red herrings in spinal imaging. *N Engl J Med.* 2013;368:1056–8.

Magnetic resonance imaging (MRI) for detecting a favorable outcome at 1 year in patients with sciatica†

MRI finding	Scale cutpoint‡	Sensitivity (95% CI)	Specificity (CI)	LR+	LR–
Disc herniation	1	14% (4 to 24)	85% (80 to 90)	0.93	1.0
	≤ 2	28% (14 to 41)	68% (62 to 74)	0.88	1.1
	≤ 3	32% (8 to 46)	65% (58 to 71)	0.91	1.1
Nerve-root compression	1	7% (0 to 14)	96% (94 to 99)	1.8	0.97
	≤ 2	15% (4 to 26)	93% (89 to 96)	2.1	0.91
	≤ 3	25% (12 to 38)	76% (70 to 81)	1.0	0.99

†Diagnostic terms defined in Glossary. Likelihood ratios calculated from data in article.

‡1 = definite presence, 2 = probable presence, 3 = possible presence, 4 = definite absence.