

FROM THE FAMILY PRACTICE INQUIRIES NETWORK

Is MRI useful for evaluation of acute low back pain?

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■ EVIDENCE-BASED ANSWER

Magnetic resonance imaging (MRI) is rarely helpful in the evaluation of acute low back pain. Limited evidence suggests that MRI may be useful in further assessing “red flags” in the history or physical exam.

MRI has a high sensitivity and specificity in the detection of cancer or infection, but it is not particularly specific when evaluating lumbar radiculopathy. Poor specificity can lead to finding clinically irrelevant abnormalities.¹

The overall evidence for the appropriate use of MRI in low back pain is limited and weak^{2,3} (strength of recommendation: **C**, based on limited randomized controlled trials).

■ EVIDENCE SUMMARY

Radiologic imaging of any kind is seldom needed in the evaluation of acute low back pain unless there are “red flags” suggestive of cancer, infection, or fracture (**Table**). Conduct a thorough history and review of systems to risk-stratify patients that may benefit from imaging.

One study of patients with low back pain identified risk factors for cancer, including age >50 years, prior cancer, unexplained weight loss, pain lasting >1 month, and no relief with bed rest.⁴ An elevated erythrocyte sedimentation rate of >50 mm/hr in the setting of these risk factors should prompt the clinician to order an MRI or bone scan.⁵

An analysis of systematic reviews and original articles by Jarvik and Deyo reported sensitivities for MRI (83% to 93%) and for radionuclide scanning (74% to 98%) in detecting cancer.⁶ MRI exhibits the best sensitivity (96%) and specificity (92%) for infection. MRI may be helpful for further evaluation of an acute neurologic deficit, suspected cauda equina syndrome, suspected active sacroiliitis, and worsening low back pain not responding to 4 or more weeks of conservative therapy.^{7,8}

Consider contrast enhancement with gadolinium when evaluating inflammatory conditions, or for patients who have had spine surgery.⁹ The lower specificity of MRI for radiculopathy means that MRI can detect disk herniations that do not cause the patient’s signs or symptoms. In one study, MRI demonstrated herniated disks

in 25% of asymptomatic persons.¹

Unfortunately, there are too few studies to guide clinicians in the appropriate use of MRI in the evaluation of low back pain.^{2,4} Higher quality evidence is needed before firm guidelines can be made for the use of MRI in the evaluation of low back pain.

Red flags for underlying causes of low back pain

Condition	Red flags
Cancer	Age >50
	History of cancer
	Unexplained weight loss
	Failure to improve after 4 to 6 weeks of conservative low back pain therapy
Spinal infection	Fever >38°C
	History of intravenous drug abuse
	Urinary tract infection
Neurologic emergencies or urgencies	Cauda equina symptoms
	Progressive neurologic deficit
	Suspicion of ankylosing spondylitis
	Unrelenting night pain or pain at rest
	Pain with distal numbness or leg weakness
Fracture	History of osteoporosis
	Chronic oral steroid use
	Serious accident or injury
Adapted from Institute for Clinical Systems Improvement ¹⁰	

■ RECOMMENDATIONS FROM OTHERS

Institute for Clinical Systems Improvement guidelines recommend considering plain films for patients with risk factors for cancer or infection.

Additional indications are listed in the **Table**. Plain films, however, do not rule out cancer. With patients who warrant a high level of suspicion of cancer, consider using MRI, computed tomography, or bone scan. Consider MRI or computed tomography also for patients with cauda equina syndrome or a rapidly progressing neurologic deficit, while concurrently consulting neurosurgery or surgery.¹⁰

CLINICAL COMMENTARY

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When a patient has acute low back pain, with or without known trauma, I rarely find it useful to order an MRI. I have found conservative therapy with anti-inflammatory agents and exercise (when a patient is able to do so) provides relief. Further intervention is rarely necessary.

For more difficult cases—when pain has been present for months and is getting worse despite conservative therapy, or for patients who demonstrate symptoms of cauda equina syndrome—I find MRI useful to help tailor therapy and make decisions regarding appropriate referral. I agree with the author that, even for patients with radicular pain, an MRI rarely changes the treatment plan. Paying attention to the risk factors identified above and performing an MRI when they are present seems to be the best recommendation.

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