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Case study

MRI lumbar spine for low back pain

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Acute low back pain is one of the most common clinical presentations in general practice. In most cases, patients will respond to conservative treatment without initially requiring imaging investigations. However, there are a variety of symptoms and signs "red flags" that merit further investigation.

MRI is far superior to CT in assessing soft tissues including: bone marrow, discs, spinal cord, nerve roots, ligaments, epidural and leptomeningeal spaces.

Below are indications that warrant further imaging investigation with MRI, however do not attract Medicare benefits when referred by an allied health or general practitioner(GP).

Indications:

1. Suspected primary or metastatic disease
 - Suspect in elderly, prior malignancy, pain at rest/ multiple sites, significant weight loss.
2. Discitis / osteomyelitis
 - Back pain + fever or immunocompromised or local wound.

3. Fracture
 - Minor trauma + high risk patient (elderly/ immunocompromised/chronic steroid use/known osteoporosis with significant new back pain).
 - Major trauma.
4. Cauda equina syndrome
 - Suspect in new onset: incontinence (urinary &/ or faecal) &/or bilateral leg weakness or sensory loss &/or saddle paraesthesia.
5. Non-infective inflammation / spondylitis
 - Broad group of causes
 - Chief amongst this group are seronegative spondyloarthropathies, especially Ankylosing spondylitis (AS).
 - Suspect AS in: Age less than 45, morning stiffness, improvement with exercise, not relieved supine, pain >3 months.

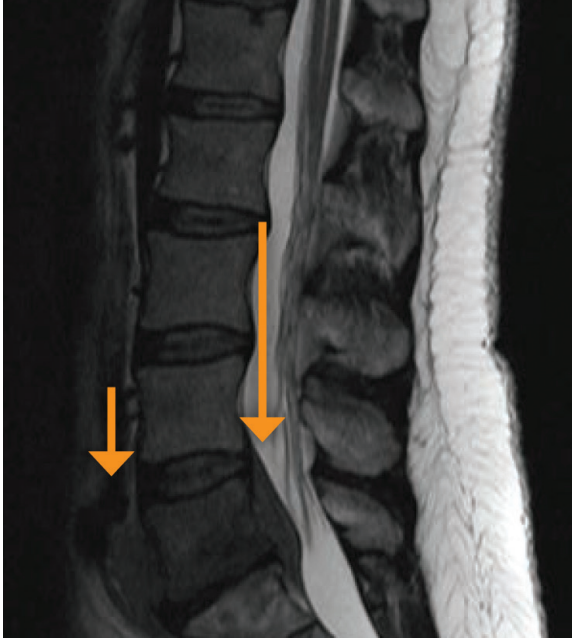


Figure 1:
Lymphoma infiltrating vertebral body, extending posteriorly into the epidural space as well as anteriorly into the prevertebral region



Figure 2:
Discitis/Osteomyelitis - L2/3 endplate and disc inflammation with destruction

6. Sciatica that has failed conservative management
 - Weakness or sensory disturbance down one or both lower limbs
 - Bilateral lower limb disturbance suggests central canal compromise.

For patients less than 16 years of age – GPs can order Medicare rebatable MRI of any part of the spine for the following circumstances:

- Significant trauma
- Unexplained neck or back pain with associated neurological signs
- Unexplained back pain where significant pathology is suspected



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Figure 3:
Stress fracture. Fracture line (orange arrow) through bone marrow with greater than 50% height loss of vertebral body. Bone oedema indicates subacute insult.



Figure 4:
Cauda equina syndrome from combination of disc and facet degenerative changes producing severe central canal stenosis.

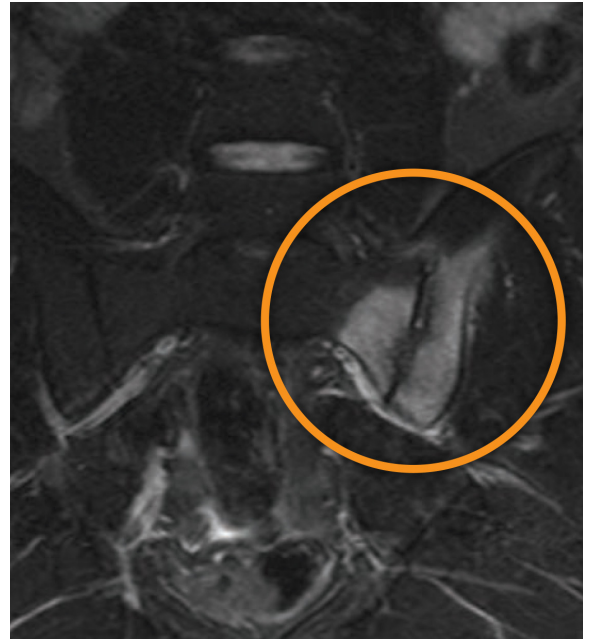


Figure 5:
Sacroiliac joint and bone marrow inflammation with probable early erosions in a patient suspected of having Ankylosing spondylitis (AS).

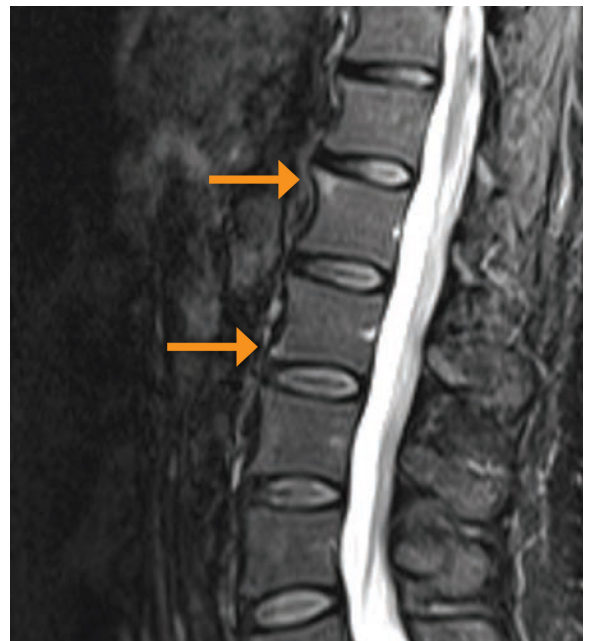


Figure 6:
Inflammation at the corners of vertebral bodies "shiny corner sign" at ligamentous attachments reflecting enthesitis in suspected AS.



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Dr Steven Irons is the Clinic Director at I-MED Radiology Frankston Private Hospital, enjoying working with a variety of specialists and GPs in the region.

He completed a fellowship in MRI at The Alfred Hospital, Melbourne in 2005 and has been a part of the I-MED team since 2006. He is a general radiologist with special interests in a broad variety of MRI imaging and non-vascular interventions.



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