Low back pain

Can we mitigate the inadvertent psycho-behavioural harms of spinal imaging?

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Background
Low back pain is responsible for significant personal and societal burden, particularly when it becomes persistent. Despite international consensus regarding the judicious use of diagnostic spinal imaging, patients continue to be over-referred.

Objectives
The aim of this article is to highlight the critical need for primary care clinicians to engage in thoughtful use of imaging procedures, and to consider alternative or adjunct methods for providing reassurance, in order to avoid or mitigate the potential negative impact of ‘anomalous’ findings.

Discussion
While imaging is frequently requested with the goal of reassuring patients, it can paradoxically have a negative impact on patient attitudes and beliefs and can influence pain behaviours. For improved patient outcomes we recommend contextualisation of radiological findings within age-related norms, use of reassuring and non-threatening language when communicating results, and educating patients on non-pathoanatomical contributors to pain.

Low back pain (LBP) is the most common musculoskeletal complaint seen in general practice in Australia, and is believed to affect the lives of one in seven to one in four Australians at any time. Low back pain is frequently benign and self-limiting; however, a significant proportion of adults with acute LBP (10–40%) develop persistent and disabling symptoms.

Spinal imaging is rarely indicated for patients presenting to primary care with a first episode of LBP, yet it is frequently requested to aid in diagnosis, rule out sinister pathology, guide treatment strategies or provide reassurance for the patient and clinician. However, imaging reports are not always reassuring and may even be perceived as threatening, given the high prevalence of aberrant findings. Much of the resulting concern is likely to be unwarranted, as many of the ‘abnormal’ features identified are likely to be found incidentally and represent ‘normal’, age-related changes that lack association with pain or prognosis.

Mechanisms of LBP
For acute LBP, a specific pathoanatomical cause is identified in only 8–15% of patients; the remainder are given the arbitrary diagnosis of ‘non-specific low back pain’ (NSLBP). Patients with LBP rarely present with symptoms that directly correspond with identifiable pathology in a linear fashion, but instead portray a complex interaction of tissue-based, immune (eg inflammatory), central nervous system (eg central sensitisation) and cognitive behavioral processes. In the case of chronic LBP, central processes are thought to have a more dominant role. Indeed, some of the strongest predictors of non-recovery are non-physical factors. Often described as ‘yellow flags’, psychosocial factors, including depression and anxiety or sustained stress, cognitive factors such as poor recovery expectation and a catastrophic interpretation of symptoms, are all significant predictors of chronic LBP following injury. It is believed that these factors may contribute to pain and disability through alteration of pain-related sensory processing, dysregulation of stress-related neuroendocrine responses and behavioral responses that are less conducive to recovery – such as avoidance of movement and activity.

Imaging best practice
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reassurance and follow-up review to ensure return to normal function. Of key relevance to this paper is the broad consensus that spinal imaging should not be routinely ordered.

Unfortunately, evidence-based recommendations and clinical practice do not always align; this may be detrimental to patient outcomes. For example, despite guidance regarding the use of simple analgesics, patients continue to be prescribed unduly high doses of opioids, which have recently been shown to be less effective than simple analgesia and may paradoxically increase pain sensitivity in the long term. Similarly, clinical guidelines consistently specify that imaging is only required in specific circumstances, particularly in the presence of red flags, a term widely used for circumstances, particularly in the presence of red flags, which frequently fall within the range of age-related norms. Radiologists often report an array of abnormalities, which frequently fall within the range of age-related norms. Many common degenerative features are present in asymptomatic populations and are not robustly linked to clinical symptoms and long-term individual outcomes. However, spinal imaging is often reported in a manner that leads to misunderstanding of the relevance of the features identified, leading patients to believe that their spine is ‘damaged’ or vulnerable – perhaps irreversibly. These negative structure-related perceptions and beliefs may in turn lead to distress, enhanced pain via neuropsychological and neuro-immune mechanisms, and the compounding of disability through behavioural mechanisms such as fear and avoidance. Clinically, this complexity may manifest as higher levels of pain or disability than expected and a higher incidence of chronicity.

**Potential negative effect of imaging**

While one of the primary aims of requesting investigations may be to reassure clinicians and patients, patients may instead be disturbed by the identification of degenerative changes. In fact, it has been shown that diagnostic testing, across multiple conditions, does not reduce patient concern for conditions or diseases with a low suspicion of serious disease, and that GPs commonly overestimate the reassuring potential of investigations in these cases. Instead, spinal imaging for NSLBP has been found to be associated with increased or prolonged disability, increased healthcare costs and a decreased sense of wellbeing.

One possible explanation for the detrimental effect of imaging is that radiologists often report an array of abnormalities, which frequently fall within the range of age-related norms. Many common degenerative features are present in asymptomatic populations and are not robustly linked to clinical symptoms and long-term individual outcomes. However, spinal imaging is often reported in a manner that leads to misunderstanding of the relevance of the features identified, leading patients to believe that their spine is ‘damaged’ or vulnerable – perhaps irreversibly. These negative structure-related perceptions and beliefs may in turn lead to distress, enhanced pain via neuropsychological and neuro-immune mechanisms, and the compounding of disability through behavioural mechanisms such as fear and avoidance. Clinically, this complexity may manifest as higher levels of pain or disability than expected and a higher incidence of chronicity.

**Recommendations**

With best-practice guidelines readily available, clinicians can be confident that if a patient does not have any clinical signs of serious pathology (ie red flags), spinal imaging can be delayed or avoided altogether. While large allocations of time are not always available for primary care clinicians, it is important that a clinician moves focus away from a pathoanatomical focus towards a constructive understanding and positive, active-management approach. Findings from a preliminary investigation suggest that patients with LBP who receive high-quality information regarding their condition and no imaging tend to have higher satisfaction and more positive perceptions about their spine and recovery. Public education may also assist in reducing the pressure on GPs to refer for imaging – similar to state health service media campaigns designed to inform the public about appropriate use of emergency departments and alternative services. Along with curbing patient expectations for imaging, an evidence-based, self-directed, active-management approach should be promoted. Furthermore, a systemic approach may assist in promoting best practice and reducing the volume of spinal imaging. One such example may be a system similar to the Australian Pharmaceutical Benefits Scheme for access to restricted medicines.

**Box 1. Guideline recommendations for the management of non-specific low back pain**

- Exclude alternative diagnoses (ie red flags)
- Avoid routine use of imaging
- Offer high-quality education
- Encourage return to normal activity
- Encourage physical exercise
- Advise use of simple analgesia
- Use opioid analgesia cautiously
Box 2. Important messages for patient-clinician interactions

- Without clinical risk factors (red flags), serious pathology is uncommon.
- Positive communication from the clinician has a significant impact on the patient.
- Most non-specific low back pain improves after 4–6 weeks, and returning to normal activity as soon as possible is highly beneficial.
- Evidence shows no benefit (and potentially negative impact) of routine imaging.
- When imaging is expected, discussions of evidence-based guidelines to aid in education may prove helpful.
- Radiological abnormalities are common and not often correlated with clinical presentation.
- Imaging findings including ‘age-related changes’ should be explained to the patient with epidemiological context and with non-threatening language.
- Referral to other health professionals may aid in patient education and improved recovery.

References


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