LS Spine X-rays in Nonspecific Low Back Pain

Subject: LS Spine X-Rays in Nonspecific Low Back Pain

Patient Population: Adults and Children Presenting with Low Back Pain

Rationale:

Low back pain is a common presenting chief complaint in Urgent Care centers, and most cases are nonspecific low back pain[1]. Routine lumbosacral (LS) spine X-rays are not recommended for patients with nonspecific low back pain in the absence of red flags, as they do not improve outcomes or change initial treatment, but they do cause unnecessary radiation exposure, expense, increased door-to-door time, and possible attribution of symptoms to incidental findings.

Introduction:

Low back pain is a common presenting complaint in Urgent Care clinics. While exact numbers are not available (a topic ripe for future research), estimates based on emergency department and primary care visits indicate that the chief complaint is between 5-10% of Urgent Care patients.

Low back pain is classified as **specific** (pain and other symptoms with a clear pathophysiological cause) or **nonspecific** (back pain, with or without leg pain, without a clear identifiable cause). Low back pain is further characterized by the duration of the symptoms as **acute** (<6 weeks), **subacute** (6-12 weeks), or **chronic** (>12 weeks)[3]. Nonspecific low back pain is usually diagnosed by excluding specific causes through history and physical exam. It is the most common and debilitating condition that responds to rehabilitation[4], and accounts for 80-90% of all cases of low back pain[1]. Most patients with acute nonspecific low back pain will recover in a short period of time[2].

There is no evidence that LS spine X-rays are beneficial in patients with acute nonspecific low back pain in the absence of risk factors (or red flags) suggesting serious underlying pathology. Imaging should be reserved for certain clinical scenarios: when informative red flags are present, or when persistent low back pain does not improve with conservative care.

Discussion:

Routine lumbosacral spine X-rays for nonspecific low back pain do not help determine the underlying cause, change treatment plans, or improve outcomes, particularly in those with

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acute nonspecific low back pain. Yet they are commonly done[4]. Statistics for Urgent Care clinics are not available (another topic ripe for future research), but approximately one in four patients presenting to primary care settings and one in three patients presenting to emergency departments with acute low back pain receive imaging[5].

Both patient and clinician beliefs drive this overuse. Patients frequently expect diagnostic imaging and present with disability and distress, creating pressure on clinicians to order imaging to sustain patient trust and satisfaction.[6] Clinicians may order imaging to reassure patients and themselves, meet patient expectations, identify an anatomical diagnosis, or in some cases, reimbursement structures create incentives to image; however, this practice pattern is problematic for several reasons. Systematic reviews have shown inconsistent associations between abnormal imaging findings and low back pain symptoms[2]. Routinely performing LS spine X-rays for acute nonspecific low back pain exposes patients to unnecessary radiation and increases healthcare costs without improving outcomes[4]. In addition, it does not change the initial management of patients, nor does it improve outcomes in either the short term (up to 3 months) or the long term (6-12 months)[7].

Imaging may be appropriate if there are red flag risk factors, such as a history of trauma, including low velocity trauma in those at risk for osteoporotic fractures. This group includes those with known osteoporosis, patients with a history of chronic corticosteroid use, and age $\geq$70. Exam red flag findings include cauda equina syndrome or other serious neurological deficits, as well as a pulsatile abdominal mass[2,8]. These exam findings typically indicate the need for urgent advanced imaging, not LS spine radiographs.

LS spine X-rays are not appropriate for evaluating those with suspected spinal metastases or infection. MRI is the initial imaging modality of choice for both of these situations[8, 9]. Plain films have a 10-17% false negative rate, require at least 50% erosion of bone to detect changes, and may miss paraspinal masses entering the spinal canal through the intervertebral foramen if there is no bone erosion.[10] Plain radiography requires 3-4 weeks after the onset of symptoms from spinal infection (vertebral osteomyelitis or discitis) for bone destruction to become evident.[11]

Clinical decision-making should incorporate both the absence and presence of red flags. A large retrospective review found that while red flags increase the probability of serious spinal pathology, their absence does not substantially lower this probability.[4] This underscores the importance of clinical judgment and follow-up, particularly for patients with persistent symptoms beyond 4-6 weeks despite conservative management.[8]

Summary:

Routine plain LS spine radiographs are not indicated in the management of acute nonspecific low back pain in patients with no red flag risk factors in their history or physical exam. Lumbar imaging in these patients, including LS spine radiographs, does not improve clinical outcomes,

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but does result in unnecessary radiation exposure and healthcare expense, and may identify incidental findings unrelated to the patient's current pain. Clinicians should refrain from routine, immediate lumbar imaging in patients with acute or subacute low back pain without features suggesting a serious underlying condition.

References:

1. Koes BW, van Tulder MW, Thomas S. Diagnosis and treatment of low back pain. BMJ 2006;332:1430-1434.
2. Chiarotto A, Koes BW. Nonspecific Low Back Pain. The New England Journal of Medicine. 2022.
3. Furlan AD, Malmivaara A, Chou R, et al. 2015 Updated method guideline for systematic reviews in the Cochrane back and neck group. Spine (Phila Pa 1976) 2015;40:1660-1673.
4. Maher C, Underwood M, Buchbinder R. Non-Specific Low Back Pain. Lancet. 2017.
5. Kamper SJ, Logan G, Copsey B, Thompson J, Machado GC, Abdel-Shaheed C, Williams CM, Maher CG, Hall AM. What is usual care for low back pain? A systematic review of health care provided to patients with low back pain in family practice and emergency departments. Pain. 2020 Apr;161(4):694-702. doi: 10.1097/j.pain.0000000000001751. PMID: 31738226.
6. Chou R, Fu R, Carrino JA, Deyo RA. Imaging strategies for low-back pain: systematic review and meta-analysis. Lancet. 2009 Feb 7;373(9662):463-72. doi: 10.1016/S0140-6736(09)60172-0. PMID: 19200918.
7. Fenton JJ, Cipri C, Gosdin M, et al. Standardized Patient Communication and Low-Value Spinal Imaging: A Randomized Clinical Trial. JAMA Network Open. 2024;7(11):e2441826. doi:10.1001/jamanetworkopen.2024.41826
8. Earwood JS, Doles NA, Russell RS. Acute Low Back Pain: Diagnosis and Management. American Family Physician. 2025.
9. Elie F. Berbari, et.al. 2015 Infectious Diseases Society of America (IDSA) Clinical Practice Guidelines for the Diagnosis and Treatment of Native Vertebral Osteomyelitis in Adults, *Clinical Infectious Diseases*, Volume 61, Issue 6, 15 September 2015, Pages e26–e46.
10. Cole JS, Patchell RA. Metastatic epidural spinal cord compression. Lancet Neurol. 2008 May;7(5):459-66.
11. An HS, Seldomridge JA. Spinal infections: diagnostic tests and imaging studies. Clin Orthop Relat Res. 2006 Mar;444:27-33.

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