Acute Nontraumatic Back Pain

Risk Stratification, Emergency Department Management, and Review of Serious Pathologies

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KEYWORDS

• Back pain • Spinal cord compression • Cauda equine • Spinal epidural abscess
• Metastatic epidural tumor

KEY POINTS

- Of emergency department patients with acute nontraumatic back pain, physicians must understand how to diagnose the minority with serious causes while simultaneously treating the large majority with conservative measures.
- Distinguishing patients with simple back pain versus those with serious causes is based on careful history, physical examination, and in some cases inflammatory markers.
- In patients with acute back pain and new abnormalities in the neurologic examination of the lower extremities, rapid MRI to diagnose the specific lesion is critical to improving outcomes in this group of patients.

INTRODUCTION

Scope of the Problem

Back pain is common and costly, with a lifetime prevalence of 80% to 90% and rapidly increasing health-related expenditures.[1,2] Adults with acute nontraumatic back pain account for 2% to 3% of emergency department (ED) visits.[3,4] Although most have benign, self-limited causes, around 5% of patients have serious pathology that, if not rapidly diagnosed and treated, can result in poor outcomes because of neurologic damage.[5] The role of the emergency physician is to identify this subset from among a large majority of patients who often require no more than a history and physical examination. Overall, the quality of evidence on this subject as it specifically relates to ED patients is weak and recommendations in the article are mostly based on guidelines, expert opinion, and clinical experience. This article reviews the most recent literature

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and guideline revisions in the ED evaluation and management of atraumatic back pain, and is an updated and expanded version of a 2015 review published in the *Annals of Emergency Medicine*.[6]

Differential Diagnosis

Patients with acute, nontraumatic low back pain are broadly divided into three categories: (1) benign, self-limited musculoskeletal causes; (2) spinal pathologies that can cause severe neurologic disability because of spinal cord or cauda equina damage; and (3) other abdominal or retroperitoneal processes that can present with back pain. We refer to these groups as simple, serious, and nonspine causes of back pain, respectively.

Simple musculoskeletal causes include degenerative spine disease, muscular or ligamentous injury, and most acute disk herniations. Sciatica, the presenting symptom of lumbosacral radiculopathy, is characterized by pain in the back radiating to the leg. This specific entity carries an estimated lifetime prevalence of 3% to 5% in adults.[7] These patients may have severe pain but have normal neurologic examinations, except for some patients with a monoradiculopathy. Making a specific anatomic diagnosis (eg, ligamentous strain vs disk herniation) is neither helpful nor necessary because the initial management is identical and the outcomes are almost always excellent.

Although self-limited musculoskeletal causes of back pain cause the most presentations for this complaint in the primary care setting, one must consider more serious potential spinal pathologies in patients presenting to the ED with back pain. Among the serious causes of back pain, the most common include metastatic epidural tumor, spinal epidural abscess (SEA), epidural hematoma, and central disk herniation (**Box 1**).

It is crucial to remember that although new neurologic physical findings strongly suggest serious disease, the converse is not true. Patients with any of the common serious causes can present with normal neurologic examinations. Not surprisingly, these patients are more likely to be misdiagnosed.[8] Failure to consider a serious diagnosis is the most common cause of misdiagnosis of patients with back pain with serious causes.[9]

Finally, in the diagnostic work-up of back pain, one must consider the life-threatening nonspinal etiologies (eg, aortic aneurysm, cholangitis, retroperitoneal hematoma; see **Box 1**). This article does not focus on the subset of patients with nonspinal etiologies of back pain; however, it is incumbent on the emergency physician to keep a broad differential and appropriately tailor diagnostic strategy in patients without a convincing musculoskeletal cause of back pain. For example, it is well known that a significant minority of patients with acutely symptomatic abdominal aortic aneurysms present with isolated back pain and that ED ultrasound is a fast and sensitive diagnostic test. Each of the conditions in **Box 1** needs to be considered.

RISK STRATIFICATION

In evaluating a patient with back pain, the major decision point often comes down to whether a patient requires advanced imaging as part of a diagnostic work-up for serious causes of back pain. This decision should not be made lightly: routine imaging has not been shown to change outcomes in patients with back pain.[10–12] Additionally, the choice to pursue advanced imaging may have downstream effects on ED resource use and throughput. In most cases, this decision can be made solely with a thorough history and physical examination, after which those with simple back pain may be safely discharged from the ED.[13–15]