Acute low back pain: diagnosis and management

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Acute low back pain (LBP) is commonly encountered and treated by primary health care physicians and different specialists. Although acute low back pain is generally a self limiting condition in the majority of cases, physicians must be aware of warning signs or red flags that may suggest infections, malignancy, inflammatory and neurologic disorders. Recurrences and functional limitations can be minimized with appropriate conservative management including medication, physical therapy modalities, exercises and patient education. Physicians should know when to refer the patient for surgery. This article briefly reviews the etiology, diagnosis, and management of acute low back pain aimed at minimizing disability and returning patient to usual daily activity.

Keywords: Acute low back pain, etiology, diagnosis, treatment.

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Introduction

Acute low back pain is a common condition seen in medical practice. It is the fifth highest reason for all physician visits.[1] In the United States approximately 90% of adults experience back pain at some time in life.[2] Back pain has a high cost, causing a direct health care expenditure of more than $20 billion annually.[3] The direct costs of diagnosing and treating low back pain in the United States was estimated in 1991 to be $25 billion annually.

Every year roughly 50% of working adults experience low back pain, of whom about 90% recover to tolerance of activities within one month. Another study showed that at least 60% of patients with acute low back pain return to work within one month, and that 90% returned within three months.[4] The approach to evaluation of acute low back pain varies considerably among physicians, and current evidence suggests that many of the tests performed are unnecessary.

The Agency for Health Care Policy and Research (AHCPR) of the US Department of Health and Human Services has developed and published national guidelines for the management of acute low back pain.[5] Several other countries and agencies, too, have promoted evidence-based guidelines for the management of acute low back pain.[6,7]

Acute back pain is a common medical problem seen in primary care and hospital-based clinics in Kuwait. However, there is no published data on the prevalence of low back pain either in the community-based or hospital-based setting in Kuwait. Several epidemiologic studies of different populations show the prevalence of low back pain to vary from 7.6% to 37%.[8]

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It should be emphasized that in this article, acute back pain is defined as pain that has been present for six weeks or less. Causes, diagnosis and treatment of chronic low back pain will be discussed in a future article. Accordingly, this review deals with the recent diagnostic evaluations and recommendations for the management of acute low back pain.

Clinical Evaluation of Low Back Pain

Low back pain can be caused by many conditions (Table 1). The AHCPR has grouped back pain into three main categories: nonspecific back symptoms, sciatica and potentially serious spinal conditions.

Table 1. **Common causes of acute low back pain**

- Nonspecific back pain (muscle spasm, back strain, facet joint pain)
- Acute disc herniation (sciatica)
- Vertebral fracture (stress fracture)
- Spondylolysis, spondylolisthesis
- Metabolic bone disease (osteoporosis)
- Inflammatory e.g. Ankylosing spondylitis
- Infection (e.g. TB)
- Malignancy (primary, secondary)

A comprehensive history and physical examination are mandatory to identify the small percentage of patients with serious conditions (red flags) such as infection, malignancy, neurological and inflammatory conditions that require immediate further evaluation (Table 2).

Table 2. **Red flags for acute low back pain**

LBP with	Look for
Unexplained weight loss, anorexia, cachectic patient	Malignancy
Fever, immunosuppression drugs, intravenous drug abuse	Infection
Bladder or bowel symptoms, weakness, saddle anesthesia	Neurologic causes
Prolonged morning stiffness, extraarticular manifestations of rheumatic diseases	Rheumatic causes

HISTORY

The history must include patient age, constitutional symptoms, presence of morning stiffness, bone pain or night pain. Other points of interest are a history of weight loss, neurological symptoms such as numbness, radiating or referred pain, bladder (urinary) or bowel dysfunction and symptoms of claudication.

It is also necessary to inquire about history of trauma, severity and characteristics of pain and the impact of the back pain on routine functions of daily living, self care, and vocational and avocational activities. The social history is also important as part of the patient evaluation.

PHYSICAL EXAMINATION

The general physical examination should include assessment of patient walk (gait), back range of motion, muscle power of the upper and lower limbs, tendon stretch reflexes, sensation, straight leg raising (SLR) and palpation over the spine and paraspinal region. Peripheral pulses, also abdominal palpation for search for organomegaly. "Non organic signs" of physical impairment have been described by Waddell (Table 3).[9,10] The presence of three or more of Waddell signs is thought to suggest a nonphysiologic element, with the need of further psychological evaluation.

Table 3. **Waddell's Signs "Non-organic Signs"**

- Superficial non anatomic tenderness
- Pain with simulated testing in axial loading, pelvic rotation
- Distraction
  - discrepancy between findings on sitting and supine straight leg raising (SLR) test
- Regional disturbances
  - 'cogwheel' weakness, non dermatomal sensory loss
- Over reaction
  - disproportionate facial expression, verbalization or tremor during examination

DIAGNOSTIC EVALUATION

Laboratory tests generally are not necessary in the initial evaluation of acute low back pain. If infection is suspected then complete blood cell count and erythrocyte sedimentation rate must be done. Other specific tests should be conducted if indicated by history or physical findings.

Plain lumbosacral X-ray is commonly requested in the initial evaluation of patients with acute low back pain. Yet there is no evidence to indicate its benefits in the early routine evaluation of acute low back

pain. At least two large retrospective studies have demonstrated the low yield of lumbar spine radiograph.[11,12] Also a recent prospective randomized control trial from UK reached a similar conclusion.[13] It has been shown that 26% of lumbar spine films and 66% of computed tomography (CT) and magnetic resonance imaging (MRI) were inappropriate.

Carey and Gamett who reviewed the use of computed tomographic scanning (CT) and magnetic resonance imaging (MRI) found that overuse of imaging studies ranged from 20% among primary care physicians to 70% among orthopedists.[14] The disadvantages of these investigations include radiation exposures, increased costs and irrelevant findings that may lead to inappropriate diagnosis and treatment. In one study, MRI revealed herniated disc in approximately 25% of asymptomatic individuals who were below 60 years of age and in 33% in persons over 60 years of age.[15] MRI or CT scan studies should be considered in patients with 'red flags', worsening of neurologic deficits, systemic symptoms and when referral to surgery is considered.

Management of acute low back pain

Generally acute low back pain is a self-limiting condition in the majority of patients, and can be managed adequately with symptomatic treatment. The aim of the treatment is to return the patients to their usual daily activities. In this section we will outline the different therapeutic approaches.

PHARMACOLOGIC THERAPIES

NON-STEROIDAL ANTI-INFLAMMATORY DRUGS (NSAID)

NSAIDs are considered the mainstay of pharmacologic treatment. A systemic review of randomized and double blind studies of NSAID in the treatment of acute low back pain has been reported in the literature. The evidence from 51 trials suggests that NSAIDs are effective for short-term symptomatic relief of acute low back pain.[16] NSAIDs are also more effective than placebo in acute low back pain. Furthermore, there does not seem to be a specific type of NSAIDs that are clearly more effective than others. The use of adequate gastrointestinal prophylaxis such as misoporstol or omeprazole in patients at risk for peptic disease, or the use of the new NSAID with selective COX2 inhibitors such as rofecoxib or celecoxib is recommended for use in elderly and high risk patients.

NARCOTICS

Narcotics may be considered for relief of severe acute low back pain in patients who fail to respond to simple analgesics or NSAIDs. Narcotic therapy should only be on a short-term basis, and avoiding prolonged use should be emphasized to the patient.

BED REST OR ACTIVITY?

Many patients ask the question, how much time of bed rest one should take and when they could get back to their normal activities.

A randomized clinical trial had shown that two days of bed rest had clinical outcomes similar to seven days' bed rest.[17] The current recommendation is two to three days of bed rest in supine position for patients with acute radiculopathy. Activity modification is now the preferred choice for patients with non-neurogenic pain.[18] Vroomen et al reported the results of the study of 103 individuals with sciatica who were placed on bed rest for 2 weeks or activities as tolerated. At 12 weeks the conclusion was that bed rest is no more effective than activity as tolerated in the treatment of scatica associated with the nerve root compression.[19]

OSTEOPATHIC MANIPULATION

The question of manual back manipulation was answered by Andersson et al who reported on the benefits of osteopathic manipulations for low back pain. After 12 weeks there was no statistical difference between conventional and osteopathic therapy in any of the primary outcome measurements.[20]

MASSAGE

Many patients ask their practitioner about the value of massage therapy done by traditional therapists. The answer based on four randomized control trials would be that there was a lack of sufficient evidence to recommend massage as a standard treatment for non-specific low back pain.[21]

EPIDURAL STEROID INJECTION THERAPY

Epidural steroid injection has been used for low back pain with sciatica. Some studies showed pain relief whereas others showed no convincing evidence of the effects of epidural steroid injection therapies for low back pain.[22,23]

Physical Modalities

Many physical modalities have been used to treat acute low back pain. The common ones include cold packs (cryotherapy), superficial heat (hydrocolloid pack), deep heat (ultrasound), acupuncture and Transcutaneous Electrical Nerve Stimulation (TENS). These modalities provide analgesic and muscle relaxation. Although we do prescribe them frequently in our daily practice, convincing evidence is still lacking to support these modalities as an effective mode of treatment in acute low back pain.[5,24,25,26]

EXERCISES

Many patients ask whether or not they should do exercises, and if recommended, what specific exercises are appropriate. The evidence from thirty nine randomized controlled trials is that exercise therapy is of similar benefit as other active treatments for acute low back pain.[27] Aerobic exercises have been reported to improve or prevent back pain.[22] In general, exercise programs that facilitate weight loss, trunk strength and stretching of musculotendenious structures appear to be helpful in alleviating low back pain. Aggressive exercise programs have been shown to reduce the need for surgical intervention.[29] The goal of an exercise program is first to prevent debilitations related to inactivity, and then to improve activity to tolerance and return patients to their normal level of functioning as soon as possible.

ORTHOTICS

CORSET

The role of corsets (lumbosacral orthoses, braces, back support) in the treatment of patients with low back pain is controversial, to say the least.[30] It may be indicated for a short period (few weeks) in patients with osteoporotic compression fractures.[18] Shoe insoles, either foam or rubber, may be beneficial in some patients.[8]

When is patient referred for surgery?

A very important question is when the patient should be referred for surgery. Surgery is indicated in selected groups of patients with acute low back pain, such as cauda equine syndrome that require immediate surgical intervention. Patients with worsening neurologic deficits or intractable pain that is resistant to conservative treatment should be refered for surgical evaluation.

Patient education and psychological evaluation should be considered as indicated from the clinical evaluation of the individual patients.

Conclusion

Acute low back pain is common. Although there are many articles published in the literature about low back pain, only a few randomized controlled trials have been reported, which would help guide the management of patients with acute low back pain. Physicians should look for 'red flags' that denote serious problems as well as for psychological factors. Plain films are of little

Key Messages

- Majority of cases of acute low back pain is generally self-limiting.
- Back pain has a high direct health cost every year.
- Most patients with acute low back pain return to work within one month.
- Comprehensive history and clinical examination in patients with acute low back pain to rule out 'red flag' and evaluate for Waddell's signs
- Radiographs of the spine are rarely indicated in the initial evaluation of acute low back pain.
- Management includes NSAIDs, avoiding strict and prolonged bed rest, and aiming at returning to activities as tolerated.

benefit in the initial evaluation, and CT and MRI should be reserved for those with red flags. The recommended conservative management is with medications, usually nonsteroidal anti-inflammatory drugs (NSAID). Gentle return to routine daily activities and avoidance of strict bed rest are encouraged. Reducing disability and helping the patient to return to his normal functional activities are aimed at. Exercise can be of benefit in patients with back pain.

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MCQs for CME

After you have completed reading the above article, take the test given below. Circle T (True) or F (False) in the answer sheet (page 36) to show the correct answer to each MCQ. MCQs 11 to 20 are related to the content in this article.

11. A minority of patients with non-specific back pain recover within one month.
12. Plain lumbosacral X-ray is mandatory in the initial evaluation of all patients with acute low back pain.
13. Computed tomography and magnetic resonance imaging should be considered in patients with bladder or bowel dysfunction.
14. The major aim of treatment of patients with acute low back pain is complete relief of pain.
15. Non-steroidal anti-inflammatory drugs (NSAIDs) have been shown to be effective for the short-term treatment of acute low back pain.
16. Prolonged bed rest has been shown by studies to be effective in the management of acute low back pain.
17. Activity modification is the current and the preferred recommendation for patient with non-neurologic pain.
18. Studies have shown that massage should be included as a standard modality for acute non-specific low back pain.
19. Applying heat and Transcutaneous Electrical Nerve Stimulation (TENS) has been shown to be beneficial in the initial management of acute low back pain.
20. The role of lumbosacral orthoses (corsets) in the management of patients with acute low back pain is still controversial.