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Back pain is one of the most common symptoms that brings patients to the emergency department (ED). Assessment of these patients is complicated by the fact that human beings have a propensity to suffer from mechanical low back pain. Most likely,

this is an intrinsic "side effect" of our evolution into bipeds, yet this evolutionary effect can be difficult to distinguish from life-threatening causes of this symptom complex. While the elderly patient with back pain and osteophytes may have an acute exacerbation of osteoarthritis, the same patient also must have more serious conditions, such as aortic aneurysm and spinal malignancy, considered in the differential diagnosis. And while the young athlete with pain caused by back trauma may have a musculoskeletal contusion, the possibility of epidural hematoma must be considered when focal neurologic deficits suggest this diagnosis.

From a clinico-economic perspective, between 70% and 90% of all individuals experience back pain at some point in their lives,^{1,2} extracting an enormous productivity toll, as well as annual medical costs estimated to be \$24 billion.^{1,2} If lost work, disability, and other indirect costs are factored into the equation, the total annual dollar cost of back pain-related illness has been estimated at between \$50 and \$100 billion.^{2,3} Each year, 2% of all Americans receive some form of compensation for back problems and 14% miss at least one day of work

because of back pain.²

As with most symptoms that emergency physicians must evaluate, there are many potential causes of acute back pain. A small but significant minority of this vast group of patients

will be afflicted with serious, life- or limb-threatening conditions. Because of the potential adverse sequelae of these potentially treatable diseases, they can be classified as "cannot miss diagnoses." For example, in the primary care setting, about 0.7% of patients who present with back pain have a spinal malignancy and about 0.01% have spinal infections, including such conditions as epidural abscess or vertebral osteomyelitis.¹

Unfortunately, disease-specific incidence figures for the spectrum of patients presenting to an ED with back pain are not currently available, but it is likely that a higher percentage of individuals with serious conditions present to the ED than they do in a primary care practice. Nevertheless, the ratio of the percentage of patients with serious disease vs. those suffering from common mechanical or simple low back pain is low, a fact that makes diagnosis potentially problematic and challenging.

As is the case in other conditions, in which the objective is to identify serious conditions that underlie common symptomatology, the emergency physician's goal is to correctly diagnose the

The Challenge of Acute Back Pain: A Practical, Evidence-Based Strategy for Optimizing Clinical Outcomes

Part I: Epidemiology, Clinical Approach, and Diagnostic Strategies

Authors: **Jonathan A. Edlow, MD**, Vice Chairman, Department of Emergency Medicine, Beth Israel Deaconess Medical Center; Assistant Professor, Harvard Medical School, Boston, MA; and **Gideon Bosker, MD, FACEP**, Assistant Clinical Professor, Section of Emergency Medicine, Yale University School of Medicine; Associate Clinical Professor, Oregon Health Sciences University.

Peer Reviewer: **Charles Emerman, MD**, Associate Professor of Emergency Medicine, Department of Surgery, Case Western Reserve University, Cleveland, OH.

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Program Director,
Affiliated Residency in Emergency Medicine
Professor of Emergency Medicine
University of Pittsburgh
Pittsburgh, Pennsylvania

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small group of patients with potentially life-compromising disease while simultaneously minimizing expensive diagnostic testing. Although there is no uniformity of opinion regarding critical pathways for back pain evaluation in the ED, one excellent and authoritative source of information for physicians evaluating patients with back pain is to consult Guidelines #14, produced by the Agency for Health Care Policy and Research (AHCPR); these protocols can be accessed and downloaded via the Internet (<http://text.nlm.nih.gov>). At this Web site, physicians can navigate through a 133-page document, with an extensive bibliography, that painstakingly details the most significant body of the research prior to 1994, when the Guidelines document was published.⁴

With these issues and challenges in mind, the purpose of this review is to present a practical approach to evaluating non-traumatic, acute back pain in patients presenting to the ED. One of the principal goals of this comprehensive monograph is to discuss strategies that help the clinician distinguish common,

mechanical back pain from serious, "cannot miss" diagnoses requiring prompt, aggressive management. In addition, new treatment strategies will be highlighted, among them, the use of cyclooxygenase-2 (COX-2) inhibitors for osteoarthritis-induced back pain.

— The Editor

The Diagnostic Imperative

The diagnostic approach to patients with back pain must be systematic, focused, and targeted. Above all, the clinician must pursue a fail-safe diagnostic algorithm that, even in the absence of yielding an organ-specific diagnosis, will help distinguish patients who are likely to harbor a serious, life- or limb-threatening entity from those whose back pain has been precipitated by more benign pathology.

As with patients who have an acute surgical abdomen or ventricular fibrillation, it is sometimes more important initially to determine the correct course of action in terms of procedural or pharmacotherapeutic intervention, or more aggressive diagnostic evaluation, than establishing an organ- or disease-specific diagnosis. This is certainly true for patients with back pain. In fact, one landmark publication has systematized the approach to back pain evaluation by suggesting that clinicians determine answers to the following three questions in all patients who present with back pain:

1. Is there likely to be a serious systemic disease causing the pain?
2. Does the patient have a neurologic disease requiring neurosurgical evaluation?
3. Is there psychological stress that might be exacerbating the patient's condition?

Although in some ways simplistic, the wisdom of this approach is also evident. If the physician can answer all three questions with some degree of accuracy, the next steps, from a diagnostic and interventional perspective, are clear. For example, if there is objective neurological compromise, the patient needs a neuro-imaging study and a neurosurgical consultation, regardless of whether the ultimate pathology is a central disc herniation or a spinal metastasis. On the other hand, if the patient is known to have systemic manifestations of osteoarthritis, the gradual onset of back pain, in the absence of neurologic findings and in the presence of confirmatory radiologic studies, is strongly suggestive of osteoarthritis as a likely etiology.

It should be stressed that despite extensive trials and a vast body of literature, there still is no consensus of opinion on how patients with acute back pain should be evaluated and risk-stratified in the acute care setting. Moreover, there are no prospective clinical instruments or decision support tools confirming the outcome-effectiveness of one approach vs. another. For example, another strategy for separating patients with serious back-related conditions from those with benign precipitants is recommended by the AHCPR Guideline #14 document, which suggests that the clinician's goal should be to classify the patient's back pain into one of the three following categories:

1. Those patients with serious spinal conditions (referred to in this review as "cannot miss diagnoses").
2. Those patients with sciatica, suggesting nerve root compression.

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Publisher: Brenda Mooney

Executive Editor: Park Morgan

Managing Editor: Valerie Loner

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Please call **Valerie Loner**, Managing Editor, at (404) 262-5475 between 8:30 a.m. and 4:30 p.m. ET, Monday-Friday.

3. Those patients with non-specific symptoms who fit into neither of the above categories.

Naturally, implicit in any set of goals, especially in this era of increased managed care, is cost-effectiveness. A corollary to this is that frequently no diagnostic studies are required in the emergency setting. In addition, it is more outcome-effective to manage the vast majority of patients who do not have one of the "cannot miss" diagnoses in a manner that returns them to their baseline activities as rapidly as possible. Finally, it is important for the physician to understand that patient satisfaction in the setting of back pain is not related to what specific tests are performed but rather to the patient-physician interaction as a whole. Providing a likely diagnosis, a discussion of maneuvers that will restore functional status, a brief explanation of the prognostic implications of the underlying condition, and a plan directed at pain management are critical components of this interaction.

Anatomic and Physiological Considerations

Optimal and rational care of patients presenting with back pain requires a fundamental, clinically relevant knowledge base as it pertains to spinal and neuroanatomy. A complete review is not possible within the scope of this monograph. However, an essential primer of relevant clinical anatomy is essential for diagnostic purposes and will be presented.

A protective bony column surrounds the canal in which the spinal cord and nerve roots are enclosed. Anteriorly, the vertebral bodies provide protection, whereas laterally, the pedicles and transverse processes serve this function; on the posterior aspect, the laminae and spinous processes protect neural tissue. Between the vertebral bodies are positioned the intervertebral disks, which are formed by an outer anulus fibrosis and an inner gelatinous nucleus pulposus. This combination of rigid bone and the softer disks facilitates weight bearing as well as shock absorption, flexibility and protection of vital neural structures. The spinal cord itself ends at the L1-L2 interspace, below which lie the lower roots that form the cauda equina.

Intervertebral disks are a common site for back pain-related pathology. For example, the pressure within the disks increases with cough, straining, bending, and sitting. At about 30 years of age, these disks often begin to degenerate,² most often posterolaterally, in the area where the nerve roots exit the spinal column via the intervertebral foramina. Over time, even the nucleus pulposus begins to fibrose, which is why it is less likely to herniate in older patients.

The epidural space lies between the vertebral periosteum and the dura that envelops the cord and cauda equina and then extends into the intervertebral foramina along with the exiting spinal nerves. The space contains fat, connective tissue, and an extensive venous plexus. In general, it requires about a 50% reduction in the anterior-posterior diameter of the spinal canal to produce neurological symptoms.⁵ There is more space in the spinal canal located in the lumbar segment as compared to the thoracic area.

Differential Diagnosis. From an anatomic perspective, there are two major strategies for working through the extensive differential diagnosis of back pain. In this regard, back pain can result from pathological processes involving all

Table 1. Causes of Low Back Pain by Region

SPINAL CAUSES

- Central disk herniation
- Tumor
- Infection—vertebral osteomyelitis, epidural abscess, brucellosis, tuberculosis
- Epidural hematoma
- Transverse myelitis
- Ankylosing spondylitis
- Spinal stenosis

ABDOMINAL CAUSES

- Biliary disease—cholecystitis, pancreatitis
- GI—posterior penetrating ulcer, esophageal disease
- GYN disease—ovarian torsion, mass, abscess

RETROPERITONEAL CAUSES

- Vascular—AAA, dissection, RPH
- Renal—stone, tumor, abscess, obstruction
- Pancreatic—abscess, pancreatitis, mass

PULMONARY CAUSES

- Any process inflaming the posterior parietal pleura—tumor, infarction, infection, pleurisy

SYSTEMIC CAUSES

- Endocarditis and bacteremia
- Transfusion reactions

contiguous anatomic areas, as well as systemic disease. Accordingly, the clinician can group the diagnostic possibilities according to contiguous structures and "regional" anatomic sites that might involve the spine, canal, and soft tissues. These can be grouped according to abdominal, pulmonary, retroperitoneal, spinal, and systemic causes. (*See Table 1.*)

Another approach is to break down the differential diagnosis of back pain according to underlying causes. For example, is the pain neurologic in etiology, vascular, visceral, or due to musculoskeletal causes? As with any problem, developing the habit of thinking through this list in all patients will help avoid missing serious disease. Consistency is more important than the specific method chosen.

Clinical Approach to the Patient with Back Pain

History. Given the diagnostic objectives to identify potential serious causes of back pain that require urgent neuroradiological evaluation and possibly, procedural intervention, it is imperative that the physician extract as much information as possible from the history and physical examination. In combination, they can provide essential clues that frequently suggest the correct diagnosis, even prior to radiological imaging. Moreover, epidemiological context is also important. For example, sudden onset of acute back pain in an older patient is

more likely due to a serious cause than pain in a younger patient.

A history of cancer suggests the possibility of metastatic disease to the spine, which is common in prostate cancer, lung cancer, and breast malignancy. A dissecting aortic aneurysm is more common in elderly patients with hypertension. A history of a known aortic aneurysm may signify aneurysmal expansion or impending rupture. A history of peptic ulcer disease may suggest a posteriorly penetrating ulcer. Other medical conditions, such as diabetes, intravenous drug use, or infection with the human immunodeficiency virus (HIV) should cause the physician to search compulsively for a serious cause, including epidural infection. Systemic anticoagulation may predispose to epidural hemorrhage, whereas recent back surgery should raise the suspicion of infection or expanding mass.

The history in patients with back pain should include the onset of pain, its duration, character, and factors that either exacerbate or ameliorate the pain. The presence or absence of trauma is especially important. A history of fever or chills may be a clue to an infection such as epidural abscess. Likewise, recent urinary tract, soft tissue, or bacteremic infection or recent spinal anesthesia may predispose to abscess. Back pain that is worse at night or with rest also is an ominous sign, since it indicates ongoing inflammation in the absence of mechanical stress.

Radiation of pain can sometimes pinpoint the anatomic origin of back-related symptoms. Pain that affects the abdomen suggests an intra-abdominal source or a lesion in the thoracic spine affecting a nerve root. Pain radiating in a unilateral distribution into the buttock or leg below the knee in a radicular pattern suggests irritation of the sciatic nerve known as sciatica.² Bilateral sciatica, on the other hand, frequently indicates more serious, extensive disease involving the nerve roots.

Duration of symptoms is another important feature that can help exclude a more benign diagnosis. For example, the natural history of mechanical low back pain and sciatica tends to be characterized by spontaneous improvement over a period of weeks. Accordingly, pain that persists beyond this time frame or worsens over time, is frequently not related to a musculoskeletal process. Co-existing symptoms such as fever, chills, weight loss, and anorexia also connote a more serious etiology for back pain. Finally, a careful history that elicits dysfunction of either the urinary or rectal sphincters points strongly to a neurological etiology.

The social history also can be important. An older person who lives alone should be questioned about frequent falls or recent use of a walking aid. Any discharge plan must be consistent with the patient's home situation.

Physical Examination. The physical examination is extremely important in evaluating patients with back pain. In this regard, a careful and meticulous neurological examination of the lower extremities is essential. The back should be inspected for ecchymosis and deformity. Muscle spasm, as well as midline and paravertebral tenderness, should be elicited, although the inter-observer reliability is fair to poor for these tests in published studies.⁶

The physician should also test for range of motion (ROM).

In one study, the straight leg raise test (SLR) was used to identify lesions that stretched the sciatic nerve. With the patient lying supine, the examiner passively flexes the hip, with the knee straight, to see if radicular symptoms can be reproduced. The nerve is not stretched till the hip has been flexed about 30 degrees; therefore, pain occurring prior to this arc of movement suggests a psychological component or that the patient is actively using the iliopsoas muscles. The clinician should record the angle at which pain begins. If the examiner lowers the leg a few degrees from where the pain was elicited, the pain should disappear. Passive dorsiflexion of the foot at that lower angle should then elicit the pain again. Crossed SLR (performing the test on the opposite side of the patient's symptoms) provides increased specificity for a sciatic nerve lesion, but at the cost of sensitivity.

As far as the neurological examination of the lower extremities, the clinician should first determine if the motor, sensory, and reflex examinations are normal. If they are not normal, the emergency physician should try to localize the lesion. Is it in the spinal cord, the cauda equina, the nerve plexus, or the nerve root? It should be stressed that an acceptable examination requires, 1) that the patient be properly exposed, including the feet and toes, and 2) that no lower extremity neurological/physical examination is complete without removal of shoes and socks.

About 95-98% of all lumbar disk herniations involve the L5 and S1 roots, whereas the majority of other herniations affect the L3 and 4 roots (the femoral nerve).^{1,7} The motor and sensory functions and reflexes supplied by these roots can be rapidly tested in cooperative patients. A matrix can be used to facilitate anatomic localization. An L5 lesion will produce the motor, sensory, and reflex impairments or manifestations as follows: impaired extension of the great toe, decreased sensation of the first dorsal web space, and no reflex changes. An S1 lesion will be characterized by weakened plantar flexion of the foot, decreased sensation in the lateral aspect of the fifth toe, and decreased or absent ankle jerk. An L3-L4 lesion is manifested by decreased strength of knee extension, decreased sensation of the medial knee, and a compromised knee reflex.

Although usually useful and essential, a rectal examination need not be performed in every patient with back pain. However, it should be performed in four subgroups of patients with back pain: 1) those with extreme pain; 2) those whose history suggests sphincter abnormalities; 3) those with any abnormality found by neurological examination; and 4) those at risk for serious, "cannot-miss" diagnoses. Urinary retention is encountered in 90% of cases and diminished anal sphincter tone is seen in about 70% of cases of cauda equina syndrome.¹ Finally, assessing the ability of the patient with back pain to ambulate is essential. Rapid deterioration in ambulation without an identifiable cause is an indication for urgent imaging. It also should be emphasized that a normal neurological examination does not exclude serious illnesses such as abscess or tumor, since these processes usually cause back pain prior to production of neurological deficits.

Laboratory and Radiographic Studies

Once the history and physical examination are complete, the

physician must decide whether or not to order laboratory or imaging studies. Clearly, the presence of neurological abnormalities, the presence of back pain in a patient with known malignant disease, HIV infection or other immunocompromise, or back pain in an elderly patient with progressive systemic symptoms, will mandate radiographic evaluation and selected laboratory tests.

For the most part, laboratory testing plays a very small role in the evaluation of patients with back pain. If historical or physical examination points to the urinary tract as a source of the patient's back pain, a urinalysis may be revealing. The complete blood count may not be helpful unless the patient has multiple myeloma or evidence of chronic anemia associated with a systemic disease. Even in patients with epidural abscess, in one study 68% (27 of 40) had an elevated white blood cell count.⁸

The only blood test that may play a role in selected cases is the erythrocyte sedimentation rate (ESR). In an analysis of patients older than 50 years of age seen in the practice of one orthopedic surgeon, the ESR was elevated in all (12 of 12) of patients with metastatic disease and most (3 of 4) patients with primary spinal tumors.⁹ Based on these findings, this author recommended an ESR, as well as serum calcium and alkaline phosphatase levels, and found that one of the three tests was positive in all patients with back pain from cancer.⁹ In a much larger study of nearly 2000 patients presenting to an outpatient clinic with back pain, an elevated ESR was also useful.¹⁰ The likelihood ratios for patients with back pain having cancer were 2.4 (for ESR > 20 mm/h), 19.2 (for ESR > 50), and 55.5 (for ESR > 100). The presence of anemia in that study (normal hematocrit > 40 for men; > 38 for women) also was somewhat predictive, with a cancer likelihood ratio of 4 in those with anemia; however, the specificity was extremely low.¹⁰

Despite evidence suggesting the possible predictive value of the ESR and other ancillary tests, laboratory testing is not recommended on a routine basis for all patients with back pain. However, the data are strongly suggestive that the ESR may be useful in specific patients (especially the elderly) who are at risk for tumor, infection, or ankylosing spondylitis.

Imaging. The decision to image patients with non-traumatic back pain is affected by a number of considerations, including historical and physical findings, the patient's age, the presence of systemic disease, and the likelihood that a "cannot miss" diagnosis is the most likely explanation for the patient's back pain. A wide variety of tests are available, among them plain films, radionuclide scans, computerized tomographic (CT) scans, magnetic resonance (MR) scans, and conventional myelography.

Each imaging modality has its unique advantages and disadvantages. And even though obtaining routine plain films of the spine is a common practice, this approach to patient assessment on a routine basis is difficult to justify.¹¹ Nevertheless, this practice continues for two reasons: 1) as a result of patient pressure "to know what the problem is"; and 2) physician discomfort with "not knowing what the problem is." Unfortunately, the information provided by many of these studies usually does not provide the answers that either party is seeking.

Regarding patient satisfaction, one study evaluated 1555 patients with back pain treated by several groups of health providers, including family physicians, internists, chiropractors, and orthopedic surgeons.¹² The investigators found that satisfaction was not specifically correlated with radiological tests that were performed. Rather, there were three determinants of patient satisfaction: 1) the patient's perception of having had a complete history; 2) the patient's perception of having had a thorough physical examination; and 3) the patient's feeling that the physician provided a clear explanation of the problem.

The physician side of this equation also has been studied. Regarding plain films, clinic-pathologic correlation can be difficult. For example, there are numerous radiologic findings that may be present on x-ray, but are not directly responsible for causing the patient's pain. Such findings include degenerative changes, spondylolysis and spondylolisthesis, Schmorl's nodes, transitional vertebrae, and others.¹³ In addition, plain films may fail to reveal such serious problems as tumor, infection, or central disk herniation, even though they may be present and responsible for the clinical presentation. In this regard, approximately 30%-50% of a vertebral body must be destroyed before one can detect abnormalities on a plain film.^{3,14} Therefore, the plain films can be normal early in the course of destructive lesions. In many other cases, plain radiographs are neither sensitive nor specific.

Bone scans are very sensitive for patients with cancer (except for multiple myeloma) but they are very non-specific.¹⁵ Degenerative changes give a similar appearance to metastatic lesions and are common in the age-group that is often being tested for cancer.¹⁵ CT scans show greater detail of the disks and soft tissues surrounding the spine. However, without the administration of intrathecal contrast, the subarachnoid space is poorly visualized and intradural lesions may be missed.⁷ In general, these two tests have been supplanted by MR imaging.

However, even MR imaging is not perfect. Multiple studies evaluating MR imaging of the lumbar spine have shown that this technique has the potential for providing misleading information, especially in patients with minimal symptoms.^{16,17} In MR scans of 98 asymptomatic people with no history of back pain, only 36% had normal discs at all levels. Fifty-two percent had at least one bulging disk, 27% had disk protrusions, and 1% had frankly herniated disks.¹⁷ In this same study, 19% of patients had Schmorl's nodes, 14% had annular defects in the disc, and 8% had facet joint arthropathy. As with any radiological study, inter-observer reliability is an important issue.¹⁸

Since the overwhelming majority of patients with low back pain improve with conservative therapy, routine MR scans, with their propensity for demonstrating abnormalities even in asymptomatic patients, may direct physicians toward unnecessarily aggressive treatment plans. This may adversely affect the patient and lead to unnecessary cost of care. Clearly, a risk stratification strategy based on history and physical examination that identifies which patients with back pain should and should not be imaged with MR scanning is essential for optimizing outcomes. (See Table 2.) This issue is discussed in more detail in subsequent sections.

Table 2. Risk Stratification for Imaging in Patients with Low Back Pain

HISTORY

1. Duration > 4 weeks
2. Failure of conservative therapy or increasing symptoms during conservative therapy
3. Bilateral radicular symptoms
4. Focal lower extremity weakness (recent use of walking aid, frequent falls)
5. History of malignancy (or suspicion of recent non-intentional weight loss)
6. HIV infection with CD4 counts of < 200
7. Urinary urgency or loss of sphincter control
8. Fever (without alternative source), recent infections
9. Claudication—neurogenic or vascular
10. Drug history
 - Immunosuppressive drugs or chronic steroids
 - IVDA
 - anticoagulation with INR > 3.0
11. Recent back surgery or spinal anesthesia *and* on anticoagulants

PHYSICAL EXAMINATION

1. Fever (without alternative source)
2. Abdominal mass or tenderness
3. Abnormal neurological findings
 - Cord lesion
 - Cauda equina lesion
 - Nerve plexus lesion
 - Nerve root (radicular) lesion

Simple and Mechanical Causes of Back Pain

By far, the most common causes of non-traumatic low back pain are musculoskeletal in origin, only a few percent of which are sciatica.¹ In the majority of cases with musculoskeletal etiologies, the physician will not be able to make a specific anatomic diagnosis (e.g., muscle strain vs ligamentous injury vs facet joint inflammation). The typically benign natural history of patients with low back pain allows such imprecision without producing poor outcomes. The vast majority of these patients, even those with herniated disks, will improve spontaneously or with conservative interventions such as nonsteroidal anti-inflammatory drugs (NSAIDs) and a few days of rest. The favorable natural history of musculoskeletal back pain emphasizes the importance of taking a careful history and performing a comprehensive physical examination that will distinguish those patients who need further evaluation from those who do not.

Because imaging studies may provide misleading information, and given the benign natural history of mechanical back pain in most patients, a strategy of highly selective imaging in patients with back pain is desirable. When imaging is not indicated, the clinician may find it advantageous to have a brief but focused discussion with the patient in order to explain and

provide reassurance about three important features of their assessment: 1) the clinician should explain that based on a careful history and physical examination (this assumes a careful history and physical examination were performed), that there is nothing to suggest a serious cause of the back pain; 2) the physician should explain that plain x-rays frequently do not show the relevant structures that may be causing back pain; and 3) that MR scanning, while it will show those details, is so sensitive that it often shows potentially misleading abnormalities even in asymptomatic individuals. This discussion can help produce patient satisfaction and reduce unnecessary expenditures.

Management. For management, there is a growing body of literature that provides guidance for the individual physician in developing a treatment plan for these patients. Traditionally, bed rest has been the cornerstone of therapy for simple, mechanical low back pain or a herniated disk without neuromotor signs. However, in one landmark study that compared two days vs. seven days of prescribed “bed rest,” there were no differences in the functional, physiologic, or perceived outcomes between the group.¹⁹ Another group of investigators compared three treatment regimens for simple, mechanical back pain: 1) bed rest for two days; 2) back-mobilizing extension exercises; and 3) continuation of normal activities as tolerated.²⁰ The latter group (i.e., those who continued normal activities) had a more rapid recovery than the treatment groups. Another study comparing physical therapy, chiropractic therapy, and a simple patient instruction booklet found only minimal differences between the two active therapies and the instruction booklet.²¹ The costs for the booklet were much less than for the physical therapy or chiropractic care.

From a clinical, outcome-sensitive perspective, the preponderance of the evidence suggests that most patients can be effectively treated with early resumption of normal activities. Common sense would dictate that strenuous activities or heavy lifting, even if “normal” for an individual patient, should be limited until recovery is well under way. Moreover, prolonged sitting may cause increased discomfort. If bed rest is prescribed, it should be only for a short period of time. While patients may benefit from physical therapy and chiropractic treatments, there is no convincing evidence that these are superior to simple time, reasonable resumption of activity, and “Mother Nature.”

With respect to pain management with medications, the AHCPR Guidelines, which examined a large body of medical literature, generated several conclusions.⁴ It should be noted that many of the studies upon which this council based its opinions were judged to be methodologically weak. First, acetaminophen, aspirin, and other NSAIDs are acceptable therapy. The Guidelines further recognized the potential adverse side effects of the NSAIDs and specifically cautioned against phenylbutazone, which has serious bone marrow toxicity. The introduction of the cyclooxygenase-2 (COX-2) inhibitor class of NSAIDs offers evidence-based advantages in managing osteoarthritic back pain, especially in the elderly.

Second, they concluded that muscle relaxants, while probably more effective than placebo, are no better than NSAIDs

and that there is no benefit from combining muscle relaxants with NSAIDs. The potential drowsiness associated with muscle relaxants was highlighted. Third, the group recognized that, while narcotics were an option in the short-term, the physician needed to be aware of side effects and issues of dependency. The evidence did not favor use of steroids, colchicine, or antidepressants.

The Guidelines also recommended against injections of facet joints and trigger points. Physical manipulation (chiropractic therapy) was deemed to be helpful in patients without radiculopathy during the first month of symptoms. Epidural injections were only recommended for patients with radiculopathy and then, only after a failure of conservative management and when there was an attempt to prevent surgery. Subsequent to publication of the AHCPR Guidelines, a randomized, double-blinded trial of epidural steroid injections for sciatica from herniated disk showed neither functional benefit at three months nor reduction in need for surgery.²²

Despite documented success with conservative therapy, the occasional patient with a herniated disk will require surgery, the referral for which generally falls under the purview of the primary care physician. The AHCPR Guidelines recommend such referral if all of three of the following conditions are met: 1) sciatica is both severe and disabling; 2) symptoms of sciatica persist without improvement or show progression; and 3) there is clinical evidence of nerve root compromise.⁴

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Physician CME Questions

41. Approximately what percentage of people experience some form of back pain at some point in their life?
 - A. 30-50%
 - B. 50-70%
 - C. 70-90%
 - D. 95%
 - E. None of the above
42. The spinal cord itself ends at what interspace?
 - A. L1-L2
 - B. L2-L3
 - C. L3-L4
 - D. L4-L5
 - E. None of the above

43. What percentage of lumbar herniations involve the L5 and S1 roots?
 - A. 75-78%
 - B. 85-88%
 - C. 95-98%
 - D. None of the above
44. Rectal examinations must be performed in patients with back pain and:
 - A. extreme pain.
 - B. a history suggestive of sphincter abnormalities.
 - C. those with abnormal neurological examination.
 - D. those at risk for a serious "cannot miss" diagnosis.
 - E. all of the above.
45. One test that may play an important role in identifying patients with back pain and cancer as an underlying etiology is:
 - A. serum chloride level.
 - B. serum magnesium level.
 - C. the white blood cell count.
 - D. erythrocyte sedimentation rate (ESR).
 - E. none of the above.
46. In patients with no history of back pain, the MRI may be misleading because:
 - A. the test can be difficult to perform.
 - B. it frequently fails to detect abnormal pathology.
 - C. a significant percentage of patients show abnormal results, including bulging disks, disk protrusion, and annular defects.
 - D. none of the above.
47. Studies suggest that the most rapid improvement in functionality and pain in patients with simple, mechanical back pain is seen with:
 - A. prolonged bed rest.
 - B. narcotic analgesics plus muscle relaxants.
 - C. a patient instruction book plus muscle relaxants.
 - D. early resumption of normal activities.
 - E. none of the above.
48. A strategy of MR scanning *all* patients with back pain is outcome-effective.
 - A. True
 - B. False

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