

THE LOW BACK PAIN HANDBOOK

A Guide for the Practicing Clinician

Second Edition

Edited by

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History and Past Medical History

Howard Liss, M.D., and Donald Liss, M.D., and Jeff Pavell, D.O.

Key Points

- * A specific symptom history is crucial to properly evaluate a patient with complaints of low back pain because it allows a more specific diagnosis.
- * The low back pain history should include age, gender, family and social history as well as occupational history and a discussion of the patient's other medical problems.
- * A thorough history help determine if causes of low back pain with high morbidity may be present including cauda equina syndrome, tumors, infections, and aortic aneurysms.
- * Urinary retention is the most common complaint in acute cauda equina syndrome, a surgical emergency.
- * Constitutional symptoms, nocturnal or rest, pain and pain unrelated to position are "red flags" and should raise suspicion of infection, tumor, or pain referred from gastrointestinal, urological, or reproductive systems.
- * The quality and quantity of low back pain can be determined using a pain questionnaire, pain diagram, or pain scale.
- * Pain worsened by sitting, lifting, twisting and bending, or with Valsalva maneuver may suggest discogenic pain.
- * Lateral disc herniations often present acutely in older people, primarily with lower extremity pain and without a classic discogenic history.
- * Suspect central lumbar stenosis and pseudoclaudication when leg and back pain increase with walking variable distances and are relieved by sitting or forward flexion, not just standing; in patients with vascular claudication, leg symptoms occur when walking fixed distances and are relieved by standing.

General Considerations

- A. **The history is the most powerful diagnostic tool.**
- B. A **specific diagnosis** leads to better management.
 1. Avoid generalized diagnoses such as "lumbar sprain" or "lumbar disc disease," for which treatment approach is unclear.
 2. A **specific diagnosis** results in a more accurate prognosis.
- C. A **working diagnosis** directs patient care.
 1. In most patients, diagnosis is not certain. However aspects of presentation suggest a specific diagnosis.
 2. Reevaluation helps confirm a diagnosis by providing additional information:
 - a. History
 - b. Physical examination findings
 - c. Response to specific treatments
- D. The history helps to determine the patient's current **emotional state** and the effect of pain on the patient's life.

- E. It is a challenge to remain alert for **unusual and serious causes of back pain**. The overwhelming majority of patients get better within 3 months, regardless of treatment or lack thereof.
- F. **Three essential tools:** an astute ear, a discerning eye, and an open mind.

Components of the Patient History

A. Demographic factors

1. Age
 - a. Younger-discogenic pain
 - b. Older-osseous, stenosis, lateral disc herniation
2. Marital status-see social history (page 55)
3. Race, nationality
 - a. Caucasian, Northern Europe-increased incidence of osteoporosis
 - b. Caucasian-ankylosing spondylitis
4. Gender
 - a. Male-discogenic, ankylosing spondylitis, Reiter's syndrome
 - b. Female-osteoporosis, fibromyalgia
5. Handedness-influence on repetitive stress in sports, work
6. Occupation
 - a. Specific physical duties-increased incidence of back injuries with lifting, twisting, vibration.
 - b. Emotional work-related stress-if significant, monitor closely for nonorganic component to pain.
 - c. Job satisfaction-high correlation with time off work
 - d. Feasibility of working part time or light duty. Every effort should be made to get patients back to work, in some capacity, as early as possible.
 - e. Time until retirement and since beginning current job
 - f. Last date that patient worked-the longer the interval off work, the less likelihood of return to work
7. Recreational activities-sports, exercise, hobbies
 - a. Time spent per week
 - b. Recent changes in duration, intensity, frequency, surface
 - c. Specific style, position, strokes

B. History of present illness

1. Onset of pain
 - a. When did episode begin?
 - b. How did pain begin?
 - i. Spontaneously
 - (a) Sudden onset
 - (b) Gradual onset
 - ii. Traumatically
 - (a) Motor vehicle, work-related, nonlegal setting
 - (b) Mechanism—flexion, extension, twist, lift, fall, sneeze, cough, strain, other
 - c. Motor vehicle accidents
 - i. Types of cars involved
 - ii. Direction of impact
 - iii. Extent of vehicle damage—however, significant injury can occur with minor damage to vehicle.
 - iv. Seat belt used? Lap belt vs. shoulder harness-flexion injuries with lap belts, torsional injuries with harness

- v. Loss of consciousness
 - vi. Did head hit windshield, or did chest hit steering wheel?
 - vii. Specific location of immediate pain, if any
 - viii. Visit to emergency department? Diagnostic and therapeutic measures performed
 - d. Work-related injuries
 - i. Details of specific injury
 - ii. Litigation pending
 - iii. Compensation for time off work
 - e. Sports-related injuries
 - i. Sports involving torsion (e.g., golf, racquet sports, baseball)—higher incidence of discogenic pain
 - ii. Sports involving hyperextension (e.g., gymnastics, dance, crew)-greater loading of posterior elements
 - iii. Details of specific injury
- 2. Quantity, quality and location of pain**
- a. Quantity or intensity of pain can be measured by use of a **visual analog scale**.
 - i. Usually a 10 cm line in which one end represents no pain while the other end represents intense pain
 - ii. Scale is marked at each visit to signify current pain intensity,
 - iii. Can also mark least and greatest pain intensity since last visit
 - iv. More sensitive in quantifying pain than verbal descriptor and can be used to assess response to specific treatment
 - b. A **body pain diagram** can be employed to mark the location of pain
 - i. Ask patient about area of most intense pain; is leg greater than back? Is the pain unilateral or bilateral?
 - ii. Is there accompanying numbness, changes of sensation, or radiation of pain?
 - c. Description of pain and its qualities; usually in patient's own words, or a questionnaire can be employed to help patient describe pain,
 - i. **McGill Pain Questionnaire** separates words that describe pain into three groups; **sensory quality of pain**—spatial, temporal, thermal and pressure; **affective quality of pain**—fear, tension, frustration; and **subjective quality of pain**—overall intensity of pain,
 - ii. The number of words chosen overall is quantified and a rank value is given to the words in each of the three groups,
 - iii. A pain rating index is then determined and can be redetermined at each visit.
 - iv. A body pain diagram is also included in this questionnaire to show location of pain as well.
- 3. Relationship of pain to daily routine**
- a. What positions increase the pain?
 - i. Prone-facet pain, lateral HNP, systemic process
 - ii. Sitting-anular tear, paramedian HNP
 - iii. Standing-central stenosis, facet syndrome, lateral HNP
 - b. Is there pain on arising from a seat? A positive answer is typical of discogenic pain,
 - c. How does walking affect the pain?
 - i. How far can the patient walk? Is the distance variable (lumbar stenosis) or constant (vascular claudication)?
 - ii. Is there more pain with uphill or downhill walking?

- (a) Patients with stenosis and facet pain have less pain while walking uphill because the lumbar spine is flexed, which increases foraminal and central canal space.
- (b) Discogenic symptoms decrease while walking downhill because the lumbar spine is extended and discs are unloaded,
- iii. Is it more comfortable to walk holding a wagon or carriage or in a flexed posture? A positive answer is typical of stenosis.
- d. How is the pain affected by time of day?
 - i. Is the patient awakened from sleep? Consider a systemic process if so.
 - ii. Is there morning stiffness? Of what duration? Discogenic patients are stiff for 20-30 minutes, whereas rheumatic patients may be stiff for 2 hours,
 - iii. Does the pain increase or decrease as the day progresses? The response helps guide treatment.
- e. Is pain intensified by coughing, sneezing, laughing, or Valsalva maneuver? In which location?
 - i. Suggests disc disease or, rarely, an intraspinal tumor,
 - ii. Reproduction of distal pain strongly supports discogenic pain,
- f. What activities is patient unable to perform?
- g. Do any positions or maneuvers relieve the pain or other symptoms?
- 4. Associated neurologic symptoms**
 - a. Location of anesthesia, hypoesthesia, hyperesthesia, paresthesias
 - i. Regional
 - ii. Dermatomal
 - iii. Sclerotomal
 - iv. Nonphysiologic
 - b. Does the patient note weakness?
 - i. Differentiate inability to perform a task due to pain from actual weakness,
 - ii. Has the patient noted a dragging foot, buckling knee, difficulty with stairs or curbs? Suggestive of myotomal, plexus, cord, nonphysiologic process,
 - c. Has the patient noted bladder, bowel, or sexual dysfunction? If so, consider cauda equina syndrome.
 - d. Does the patient have associated upper extremity, CNS, or brainstem symptoms?
- 5. Diagnostic studies**
 - a. The patient should be requested to bring in all images and reports, b. Patient should report the results of unavailable studies.
- 6. Response to prior treatments-ask for specifics (answer helps guide treatment)**
 - a. Bedrest-limited benefit in stenosis
 - b. Medications
 - i. Benefits
 - ii. Side effects
 - c. Modalities
 - i. Superficial heating and cooling
 - ii. Electrical stimulation
 - iii. Ultrasound
 - iv. Transcutaneous electrical nerve stimulation (TENS)
 - d. Manual or mechanical therapy
 - i. Centralization techniques-passive and active extension, shift correction. Positive response suggests discogenic pain.

- ii. Traction
 - iii. Stretching
 - iv. Mobilization
 - (a) Relief with specific facet mobilization suggests facet disease.
 - (b) Mobilization may also treat other causes of pain, i.e., segmental dysfunction.
 - v. Manipulation may treat facet pain and other sources of lumbar spine pain.
 - vi. Rapid response to facet manipulation suggests a facet syndrome,
 - e. Exercise
 - i. Flexibility
 - ii. Strengthening and stabilization
 - iii. Aerobic conditioning
 - f. Education in proper body mechanics
 - g. Corset or bracing
 - h. Biofeedback
 - i. Soft tissue injections
 - i. Trigger points
 - ii. Tendon
 - iii. Ligament
 - j. Spinal injections
 - i. Anesthetic phase relief or steroid phase relief
 - ii. Fluoroscopy and/or contrast used?
 - k. Percutaneous rhizolysis
 - l. Acupuncture
 - m. Surgery
 - i. Specific procedure and date performed
 - ii. Immediate change in symptoms/signs
 - iii. Long-term change in symptoms/signs
 - iv. Complications
- C. Past history**
1. Prior and current medical conditions
 - a. Diabetes
 - b. Hypertension
 - c. Cardiac disease
 - d. Cancer
 - e. Infections
 - f. Rheumatologic diseases
 - g. Gastrointestinal disorders (tolerance for NSAIDs)
 2. Present medications and drug allergies
 3. Operations, injuries and previous hospitalizations, with names, addresses, phone numbers of all practitioners involved in patient's care
 4. Review of systems, asked selectively
 - a. Constitutional symptoms
 - i. Weight loss
 - ii. Loss of appetite
 - iii. Fever or night sweats
 - iv. Chills
 - v. Fatigue
 - vi. Night pain
 - b. Integument-rheumatologic disorders
 - c. Lymph nodes
 - i. Malignancy
 - ii. Infection

- d. Hematopoietic system
 - i. Anemia
 - ii. Bleeding
 - e. Endocrine system-symptoms suggestive of
 - i. Diabetes
 - ii. Thyroid dysfunction
 - f. Eyes
 - i. Visual loss
 - ii. Inflammation
 - g. Mouth
 - i. Pain
 - ii. Ulcerations
 - h. Bones, joints, muscles
 - i. Pathologic fractures
 - ii. Peripheral or cervicothoracic joint symptoms
 - iii. Muscle pain or weakness
 - i. Breasts
 - i. Pain
 - ii. Lumps
 - iii. Discharge
 - j. Respiratory system
 - i. Pain
 - ii. Shortness of breath
 - iii. Cough
 - k. Cardiovascular system
 - i. Chest pain
 - ii. Palpitations
 - iii. Orthopnea
 - iv. Dyspnea on exertion
 - v. Intermittent claudication
 - vi. Distal skin lesions
 - vii. Edema
 - l. Gastrointestinal system
 - i. Dysphagia
 - ii. Nausea
 - iii. Vomiting
 - iv. Hematemesis
 - v. Jaundice
 - vi. Change in bowel habits
 - vii. Bowel incontinence
 - m. Genitourinary system
 - i. Urologic
 - (a) Nocturia
 - (b) Dysuria
 - (c) Hematuria
 - (d) Pyuria
 - (e) Urinary frequency
 - (f) Retention
 - (g) Incontinence
 - ii. Gynecologic
 - (a) Number of full-term pregnancies
 - (b) Last menstrual period (currently pregnant?)
 - (c) Are menses regular or irregular?
 - (d) Date and results of last pelvic exam and Papanicolaou smear
 - (e) Back or lower extremity pain associated with menses
 - n. Nervous system
 - i. Cranial nerves
 - ii. Movement disorders
 - iii. Coordination
 - iv. Convulsions
 - v. Mental status
- D. Family history**
1. Familial conditions

2. Family members with chronic pain syndromes/spine pain
3. Family members on disability

E. Social history

1. Open-ended: "Tell me about your family."
2. Marital status—impact of condition on relationship and vice versa
3. Children—impact of condition on relationship and vice versa
4. Substance abuse history
 - a. Alcohol intake
 - b. Smoking history
 - c. Illicit drug usage
5. Social and economic status
 - a. Extent of education
 - b. Special financial problems

III. History of Specific Conditions

A. Discogenic pain

1. Silent
 - a. Most patients over age 30 have pathologic evidence of disc degeneration, according to autopsy studies.
 - b. At least 30% of asymptomatic individuals have abnormal imaging studies,
 - c... Treat the patient-not the imaging study.
2. Features common to most **symptomatic** presentations of lumbar disc disease
 - a. Risk factors
 - i. Height
 - ii. Prolonged sitting
 - iii. Twisting and rotation
 - iv. Occupations involving vibration (e.g., truck drivers, heavy machinery operators)
 - v. Chronic cough
 - b. Onset
 - i. Usually spontaneous
 - ii. Discrete causative event in 10-20% of cases
 - (a) Prolonged driving
 - (b) Lifting
 - (c) Coughing
 - (d) Sneezing
 - (e) Flexion, flexion/rotation
 - c. **Classic discogenic history-factors** that worsen the pain
 - i. Sitting > standing > lying
 - ii. Arising from seated position
 - iii. First 20-30 minutes of day
 - iv. Coughing, sneezing, straining (Valsalva maneuver)
 - v. Lifting weight out in front of body
 - vi. Twisting
 - vii. Bending at waist
3. Anular tear
 - a. Common entity, often mistakenly diagnosed as lumbar strain
 - b. Mean age-probably early in fourth decade
 - c. Location of pain-not below sacroiliac region
 - d. Discogenic history (see above)
 - e. Often "locked" in flexion with acute attacks
 - f. No neurologic signs (nonradicular)

- g. Diagnostic studies generally normal (except discogram)
 - h. Response to treatment—generally improved with passive extension, side gliding, proper body mechanics
4. Paramedian protrusions and herniations
- a. Most common herniation
 - b. Mean age—40 years; unusual after age 70
 - c. Location of pain
 - i. Variable percent of back and lower extremity pain—larger protrusions generally associated with peripheral pain.
 - ii. Dermatomal location is best prediction of which root is involved,
 - d. Relationship of pain to position, movement, activities, time of day
 - i. Patients have discogenic history (see above),
 - ii. Occasionally pain increases with ipsilateral weight bearing in standing and/or sitting,
 - iii. Patients are most comfortable in supine or lateral decubitus position with hips and knees flexed,
 - iv. Patients with very large paramedian herniations are very uncomfortable in standing and extension,
 - e. Neurologic symptoms and signs
 - i. Patients may note radicular pain or sensory changes.
 - (a) Radiculopathy with abnormal change in strength or sensation
 - (b) Radicular pain with **no** objective abnormalities (only subjective) in strength or sensation
 - ii. 90-95% involve L5 or S1 roots.
 - iii. Calf cramps may occur with S1 radiculopathy on occasion,
 - f. Diagnostic studies—over 80% have abnormal imaging and electrodiagnostic testing results,
 - g. Response to treatment
 - i. Pain centralizes with extension or side gliding,
 - ii. Pain peripheralizes with flexion activities or manipulation,
 - iii. Pain diminishes significantly with epidural injection procedure,
 - h. Time course of pain: > 90% improve within 12 weeks, but recurrences are common.
5. Lateral and foraminal herniations
- a. Frequently missed diagnosis—accounts for 10% of all lumbar surgical procedures
 - i. 60% involve L4-L5.
 - ii. 30% involve L3-L4.
 - iii. < 10% involve L5-S1 (contrast with paramedian protrusions and herniations).
 - b. Mean age—60 years
 - c. Onset of pain is usually spontaneous (cause rarely identifiable),
 - d. Time course of pain
 - i. Recurrences are not common once symptoms resolve,
 - ii. Contrast with paramedian protrusions and herniations.
 - e. Location of pain
 - i. Lower extremity pain is almost always present.
 - ii. Patient can usually identify a specific location, allowing a dermatome to be delineated.
 - iii. Most patients do not have significant back pain,
 - f. Relationship of pain to position, movement, activities, time of day

- i. Patient may not have discogenic history (see page 37).
 - ii. Pain is worst with standing or walking erect,
 - iii. Patients are often uncomfortable in bed; many sleep sitting,
 - iv. Sitting usually affords relief,
 - v. Pain with Valsalva maneuver is atypical,
- g. Neurologic complaints
 - i. Neurologic symptoms are frequent and occur in a radicular distribution,
 - ii. Bilateral complaints are rare and sphincter disturbances nonexistent,
- h. Diagnostic studies
 - i. Magnetic resonance imaging (MRI)
 - ii. Computed tomography (CT), especially if fine (3-mm) cuts are obtained
 - iii. Almost never seen on myelography alone because the lateral recesses and foramina are poorly visualized
 - iv. 50% seen on CT myelography
 - v. Usually seen on CT discography
- i. Response to prior treatments
 - i. Generally more resistant to mobilization, centralization, and traction than other disc presentations,
 - ii. Traction may temporarily worsen pain in 10-20% of patients.
- 6. Upper lumbar protrusions and herniations**
 - a. Mean age—55 years (higher than for patients with paramedian L4-S1 herniations)
 - b. Patients with prior L4-S1 fusions are at significant risk,
 - c. Location of pain relates to level of involved disc,
 - i. L1-L2, L2-L3: groin, anterior thigh, back
 - ii. L3-L4: extension to knee and medial leg
- 7. Sequestered disc herniations and disc fragments**
 - a. Often diagnosed at time of surgery
 - b. According to literature, MRI has diagnostic accuracy of 85%.
 - c. Suspect sequestered disc in patients with discogenic history when:
 - i. Discomfort during Valsalva maneuver or lifting abruptly resolves,
 - ii. Back pain decreases and lower extremity pain increases.
- 8. Cauda equina syndrome**
 - a. Background information
 - i. Acute cauda equina syndrome is still considered a surgical emergency.
 - (a) Must always be a consideration in patient with back pain.
 - (b) Outcome may not change even with immediate surgery,
 - ii. 0.0004% of all back pain patients
 - iii. Tumors are responsible for 50% of cauda equina syndromes,
 - iv. Central L3-L4 and L4-L5 discs represent most benign cases
 - b. History
 - The most common complaint is urinary retention.
 - Other complaints may include:
 - (a) Bladder incontinence
 - (b) Bowel incontinence
 - (c) Sexual dysfunction
 - (d) Diminished perineal sensation
 - (e) Bilateral lower extremity neurologic complaints or pain
- B. Other conditions associated with radiculopathy or radicular pain**
 - 1. Lumbar stenosis**
 - a. History is the absolute key to diagnosis.

- i. Examination and electrodiagnostic testing remain normal until late in course of disease.
 - ii. Imaging has high false-positive rate.
- b. Age-as early as fourth decade but uncommon before age 55
- c. Medical background-history of significant prior disc or facet joint degenerative disease is common,
- d. Onset of pain
 - i. Spontaneous, insidious
 - ii. **Gradual** progression-sudden changes in symptoms require an explanation other than stenosis (e.g., herniated nucleus pulposus, tumor),
- e. Location of pain
 - i. "Pain" is a word generally not used by patients with stenosis,
 - ii. **Central canal** stenosis-symptoms are generally noted **bilaterally**, fairly symmetrically, but in nonspecific distribution,
 - iii. **Lateral or foraminal** stenosis-symptoms are generally noted **unilaterally in** a fairly specific dermatomal distribution,
- f. Relationship of pain to position, movement, activities, time of day
 - i. Activities involving extension, which narrows the foramina and spinal canal, are associated with increased symptoms,
 - ii. Symptoms: walking > standing > lying iii. Sitting is often asymptomatic and relieves symptoms,
 - iv. Valsalva maneuver should not affect symptoms in pure stenosis,
 - v. Flexion relieves symptoms.
 - (a) Sitting is comfortable until late in course of disease; bicycling and long car rides are well tolerated.
 - (b) While walking, relief is obtained with positions that increase lumbar flexion, e.g., squatting, stooping, going uphill, leaning on walker or cart.
 - vi. Nocturnal lower extremity paresthesias and pain have been noted in patients with congestive heart failure and stenosis (Vesper's curse),
- g. Progression of disease
 - i. This condition gradually advances over several years unless other conditions, such as disc disease, intervene.
 - ii. Initially symptoms occur only with walking long distances,
 - iii. Patients must sleep sitting or flexed after significant progression,
 - iv. Late in the course of disease patients walk with kyphotic posture and spend most of their time sitting,
- h. Associated neurologic symptoms
 - i. Particularly in central stenosis, symptoms may be nonfocal and neurologic examination may be normal,
 - ii. Main symptoms are sensory.
 - (a) Vague dysesthesias
 - (b) Coldness
 - (c) Vague sense of weakness or "giving way"
 - (d) Bizarre symptoms (e.g., water trickling down legs)
 - iii. Regardless of nonfocal nature, neurologic symptoms limit walking-called pseudoclaudication or neurogenic claudication)
 - iv. Very late in disease patients note focal weakness or numbness or sphincter disturbances,
 - v. Unlike vascular claudication, patients with stenosis are generally com-

portable on exercise bicycles because they are in flexion, which increases the size of the central canal,

- i. Diagnostic studies
 - i. All patients should have CT/myelography or MRI to support clinical findings.
 - ii. Beware of the significant number of false positives,
- j. Response to prior treatment
 - i. Flexion exercise regimens may provide transient relief only,
 - ii. Chairs and corsets that place the patient in flexion may provide relief,
 - iii. Epidural injections may provide some relief,
 - iv. Adequate decompressive laminectomy provides permanent relief.

2. Spondylolisthesis

a. Isthmic

- i. Most often presents with symptoms in late childhood or adolescence,
- ii. This diagnosis should be entertained in athletic children, especially those involved in sports with significant lumbar extension and rotation that stress the pars interarticularis (e.g., gymnastics, dance, martial arts, and crew).
- iii. L5-S1 most commonly involved
- iv. Location of pain-L5 or S1 dermatome
- v. Minority of symptomatic patients have radicular symptoms
- vi. In some cases, symptoms may result from stenosis exacerbated by instability.
- vii. Worsened with extension
- viii. Spondylolysis often progresses to spondylolisthesis at time of adolescent growth spurt-when the **slip** occurs,

b. Degenerative

- i. Female-to-male ratio of 6:1
- ii. Age-onset on rare occasions at age 40; incidence increases with age.
- iii. L4-L5 most commonly involved
- iv. Pain is most commonly of the unilateral radicular type, probably due to resultant foraminal stenosis,
- v. Bilateral calf pseudoclaudication is less common.

3. Tumors-multiple types of primary and metastatic tumors can cause radiculopathy, polyradiculopathy, or myelopathy (see "Spinal tumors," page 45).

4. Herpes zoster radiculopathy

- a. Incidence is 1-2 per thousand in general population,
 - i. Rare in children but increases with age
 - ii. 10 per thousand during ninth decade
- b. Medical background
 - i. 6% have history of cancer.
 - ii. 8% of leukemia and lymphoma patients get *H. zoster*.
 - iii. 25% of patients with Hodgkin's disease get *H. zoster*; incidence is greater in patients who have had splenectomy, chemotherapy, or within 1 year of radiation therapy,
 - iv. No lasting immunity from prior episode
- c. Onset and duration of pain
 - i. Always spontaneous
 - ii. Pain generally precedes vesicular lesions by a few days; skin lesions may not appear for 3 weeks.

- iii. Pain usually lasts through eruption period; scabs form by 1 week and healing occurs within 1 month.
 - iv. 10-20% have postherpetic pain-more common in older population,
 - v. Systemic complaints are noted in 5% at onset (e.g., headache, fever, adenopathy, nausea),
 - d. Location of pain and lesions
 - i. Almost always involves single, unilateral dermatome
 - ii. 2-10% get disseminated lesions and pain-usually in patients with history of cancer,
 - iii. 50% involve thoracic roots; cranial nerves and cervical, lumbar, and sacral roots may be involved.
 - e. No clear relationship of pain to position, movement, or activities
 - f. Associated neurologic symptoms
 - i. Most patients have dysesthesias initially; some have residual numbness,
 - ii. Up to 30% of patients develop weakness, according to the literature,
 - iii. Full paresis occurs within hours to days.
 - (a) 55% recover fully.
 - (b) 30% recover significantly from weakness.
- 5. Diabetic radiculopathy**
- a. Patients are usually middle-aged or elderly.
 - b. Term has been used loosely and applied to diabetic plexopathy and amyotrophy.
 - c. Pain is universal; sensory as well as motor complaints are common,
 - d. Pain is generally constant, worse at night, and occasionally associated with weight loss,
 - e. At times may be wrongly diagnosed when the true disorder is a lateral her-niated nucleus pulposus.
- 6. Arachnoiditis**
- a. Studies reveal the nearly universal presence of adhesions and scar formation in postoperative patients as well as in many patients with disc disease; most are asymptomatic.
 - b. Medical conditions predisposing to symptomatic arachnoiditis
 - i. Disc space infections
 - ii. Subarachnoid hemorrhage
 - iii. Surgery-especially multiple surgeries
 - iv. Intrathecal drugs
 - v. Radiation therapy
 - vi. History of pantopaque myelography
 - c. History suggesting adhesions as cause of symptoms (both i and ii)
 - i. Reproduction of lumbar or lower extremity symptoms with long stride or cervical and thoracic flexion
 - ii. Sitting, lifting, and Valsalva maneuvers are much less uncomfortable (e.g., no discogenic history)
- C. Sciatic neuropathy**
- 1. A lesion involving the sciatic nerve or its branches should be considered in the differential diagnosis of a neuropathic picture involving L5 and/or SI symptoms and signs.
 - 2. Trauma
 - a. Type of trauma
 - i. Blunt-fall or contusion
 - ii. Penetrating-injection, knife, fracture

- iii. Traction-hip joint surgery
 - b. Clinical picture
 - i. Neurologic complaints and deficits are more common than pain,
 - ii. Peroneal division is more susceptible to trauma, probably because of its more peripheral location.
 - 3. Tumors
 - a. Sciatic nerve or its branches may be involved,
 - b. Variable degrees of pain and neurologic deficits may be present,
 - c. Symptoms do not relate to spinal posture or Valsalva maneuver,
 - d. Patient has no discogenic history (see page 37).
 - 4. Compression neuropathies
 - a. Sciatic nerve
 - i. "Wallet" sciatica-controversial; pain caused by large wallet while sitting
 - ii. Piriformis syndrome
 - (a) Myofascial pain (see "Muscle-based pain," next page)
 - (b) Pyomyositis of piriformis muscle-extremely rare
 - b. Compression of more distal branches
- D. Facet joint pathology (facet syndrome)**
1. History
 - a. Approximately 80% of patients have evidence of prior disc disease.
 - b. Onset often relates to increased axial loading and hyperextension activities (e.g., overzealous press ups).
 - c. Pain with extension and ipsilateral side bending and rotation theoretically suggest facet-based pain, but studies have not clearly supported this association.
 - d. Standing generally worsens pain compared with sitting, but no pseudoclaudication is present, as in lumbar stenosis.
 - e. Pain location
 - i. Predominantly in back
 - ii. Generally not distal to the buttock; rarely if ever below knee
 - f. No localizing neurologic symptoms
 - g. Dramatic response to facet manipulation suggests facet syndrome.
 - h. Relief during anesthetic phase of properly performed fluoroscopically guided, contrast-enhanced facet injection is **diagnostic**.
 2. Conditions causing facet pain
 - a. Osteoarthritis
 - i. Disc disease is almost universally present,
 - ii. Onset is generally gradual,
 - b. Instability
 - i. Spondylolisthesis—facet joint may be source of nonradicular pain
 - ii. Other causes
 - c. Acute subluxation
 - i. Controversial entity, may be difficult to distinguish from annular tear
 - ii. Acute onset of pain after sudden rotation or hyperextension
- E. Muscle-based pain**
1. Strains
 - a. Uncommon entity that is overdiagnosed
 - i. Muscle spasm or pain is often concomitant with primary condition (e.g., annular tear, facet syndrome).
 - ii. Lack of other physical findings may mislead the diagnostician to emphasize secondary muscle pain instead of focusing on underlying primary condition.

- b. Pain with stretch or prolonged contraction of involved muscle
- c. Acute lumbar paraspinal compartment syndrome
 - i. Rare entity
 - ii. Patients with constant severe pain after prolonged lumbar muscle contraction
- 2. Fibromyalgia (see Chapter 27)
- 3. Myofascial pain syndromes-piriformis syndrome (see Chapter 27)
- F. Sacroiliac joint pain**
 - 1. General considerations
 - a. Incidence and clinical presentation are controversial, but sacroiliac joint is involved in 40% of patients with chronic low back pain below belt line,
 - b. History
 - i. Nonspecific
 - ii. Onset-gradual or sudden
 - iii. Location of pain
 - (a) Commonly affects sacroiliac region and buttocks
 - (b) May cause posterior thigh or groin pain
 - (c) Infrequently causes lower quadrant and/or symphysis pubis pain
 - (d) Usually unilateral
 - (e) Relationship to position and movement varies, but most patients feel best when reclining.
 - iv. Pain with Valsalva maneuver has been described in poorly controlled studies,
 - v. Dysesthesias also have been described.
 - 2. It is difficult to distinguish above history from either discogenic or facet pain.
 - 3. Consider sacroiliac-based pain in following settings
 - a. From mid pregnancy to postpartum period
 - b. Possible rheumatic conditions involving positive HLAB27 marker (e.g., ankylosing spondylitis, psoriatic arthritis, Reiter's syndrome, inflammatory bowel disease)
 - c. After trauma, especially motor vehicle accident
 - d. After extensive spinal fusion
- G. Spinal fractures**
 - 1. Macrotrauma
 - 2. Compression fractures
 - a. At least one-third are asymptomatic.
 - b. Overwhelming majority occur in people with osteoporosis.
 - i. Most common in postmenopausal women or women with early surgical menopause
 - ii. Associated with prolonged corticosteroid use for systemic disorders (e.g., chronic obstructive pulmonary disease, systemic lupus erythematosus)
 - iii. In absence of clear etiology in younger patients (e.g., 40s, 50s), consider malignancies such as multiple myeloma,
 - c. Onset
 - i. Usually but not always sudden
 - ii. Often caused by little or no perceived trauma
 - iii. May occur after cough or on toilet seat
 - d. Course
 - i. Symptoms generally resolve within 6 weeks.
 - ii. On occasion delayed posttraumatic vertebral collapse (Kummell's disease) develops.

- iii. About 45% of patients with osteoporotic compression fractures experience another fracture in the next 12 months.
 - e. Location of pain
 - i. Most frequently involved vertebrae are T10, T11, T12, and L1 with resultant lumbar pain, ii. Lumbar fractures may result in lower extremity pain and occasionally neurologic symptoms.
 - f. Relationship of pain to position, movement, and activity
 - i. Increased pain with changing positions
 - ii. Generally worse in spinal flexion
- 3. Stress fractures
 - a. Consider this diagnosis in people involved in repetitive hyperextension, rotational, and axial loading activities (e.g., gymnasts, dancers, runners),
 - b. Symptoms are aggravated by extension, rotation, and weight bearing,
 - c. Unilateral weight bearing with hyperextension may localize the side of the fracture (right or left).
- H. Rheumatic diseases** (spondylitides-see Chapter 27)
 - 1. Ankylosing spondylitis
 - 2. Reiter's syndrome (reactive arthritis)
 - 3. Psoriatic arthritis
 - 4. Enteropathic arthritis
- I. Spinal infections**
 - 1. General considerations
 - a. Diagnosis must be made rapidly to avoid neurologic consequences of rapidly expanding mass or seeding of central nervous system and sepsis.
 - b. Strongly consider possibility of spinal infection in immunosuppressed patients, after prior sepsis, and after spinal procedures.
 - c. Be suspicious when pain is constant, awakens the patient, or does not relate well to position or movement
 - 2. Epidural abscess
 - a. 30-40% occur secondary to osteomyelitis or disc space infection.
 - b. Rarely may follow after epidural blockade, particularly with indwelling catheter
 - c. Progression of symptoms-usually within 1 week
 - i. Spinal pain usually with fever
 - ii. Nerve root pain
 - iii. Weakness
 - iv. Paralysis
 - v. Central nervous system signs
 - vi. Sepsis
 - vii. Slowly progressive presentation, ranging from weeks to months, is less common.
 - 3. Vertebral osteomyelitis
 - a. More common during childhood
 - b. Average delay to diagnosis is 3 months.
 - c. Presentation
 - i. Most common symptom is back pain that increases with motion, ii. Many patients have fever and sweats.
 - iii. Occasionally patients complain of sciatica, abdominal pain, malaise, or weight loss.

- iv. Tuberculosis of spine has slower course; symptoms are often constitutional, not necessarily pulmonary.

4. Disc space infection

- a. Most occur after surgical or percutaneous procedures, but contiguous spread from osteomyelitis is possible.
- b. Complaints of local pain within few days of a procedure should raise suspicion.

J. Spinal tumors

1. General considerations

- a. Average delay to diagnosis is 3 months.
- b. Average age for primary malignant tumors is 50; for benign tumors, 20.
- c. Be suspicious when pain is constant, unrelated to position, awakens the patient, or persists beyond 1 month despite treatment.
- d. Weight loss, anorexia, dry cough, change of bladder or bowel habits, and smoking history should raise suspicion.

2. Benign primary tumors

- a. Osteoid osteomas and osteoblastomas occur under age thirty 90% of the time.
- b. Aspirin may provide dramatic relief for the above two tumor types.
- c. Giant cell tumors often present with neurological symptoms/signs.

3. Malignant primary tumors

- a. Multiple myeloma is most common.
- b. No specific identifying characteristics.
- c. Be concerned when constitutional symptoms are present.
- d. Neurologic signs, including sphincter disturbances, are not uncommon; often they cannot be explained by a monoradiculopathy.

4. Metastatic tumors

- a. Any patient with back pain and history of cancer should be considered a candidate for metastatic disease until proved otherwise.
- b. Most common metastatic tumors are bronchogenic, breast, prostatic, and renal.
- c. Pain is most common presenting symptom.
 - i. Pain may present as in disc disease, starting with mild local complaints and progressing to severe radicular complaints.
 - ii. Sudden increase in pain may reflect pathologic fracture or instability.
- d. Neurologic complaints may signal irreversible spinal cord or cauda equina compression and must be addressed rapidly.
- e. Sudden deterioration of neurologic function may suggest ischemic insult and carries worse prognosis.

K. Vascular-based pain

1. Vascular claudication

- a. Most patients have history of smoking, diabetes mellitus, or hyperlipidemia.
- b. Onset may be gradual or sudden.
- c. Location of pain
 - i. May involve calves asymmetrically
 - ii. Leriche syndrome-buttock claudication and impotence due to aortoiliac occlusive disease,
- d. Relationship to position and activity
 - i. Increased work demands on lower extremity musculature worsen symptoms,
 - ii. Walking uphill increases symptoms.

- iii. Claudication symptoms caused by cycling and walking are relieved by cessation of activity (contrast with lumbar stenosis)
 - iv. Standing, sitting, and flexion do not reproducibly relieve symptoms.
 - 2. **Abdominal aortic aneurysm**
 - a. Medical background same as for vascular claudication
 - b. Characteristics of pain
 - i. Localized to lumbar region
 - ii. Constant
 - iii. Gradually worsens
 - iv. Unrelated to motion
- L. **Viscerogenic**
 - 1. General considerations
 - a. Pain from visceral disease is modified by state of activity of viscera.
 - b. Careful review of systems, including screening for constitutional symptoms, is instrumental in detecting visceral disorders,
 - c. Symptoms do not relate to position or movement.
 - 2. Urologic disorders
 - a. Prostatitis
 - b. Renal disease
 - c. Bladder and testicular conditions usually are not accompanied by back pain.
 - 3. Stomach and duodenal diseases
 - 4. Pancreatic disease
 - 5. Retroperitoneal disease radiates to back and at times to abdomen, groin, and anterior thigh.
 - 6. Gynecologic disorders
- M. **Nonorganic or psychogenic symptoms**
 - 1. Malingering-intentional misrepresentation of signs and/or symptoms
 - a. Potential secondary gain is evident.
 - b. Patient asks excessive questions about disability and legal issues,
 - c. Excessive emphasis on details of initiating accident
 - d. Patient is overly fearful of invasive tests or procedures,
 - e. Patient may seem more interested in details of condition than in actual treatment.
 - 2. Depression, anxiety, **hysteria—unintentional**, subconscious presentation of non-physiologic signs or symptoms
 - a. Nonphysiologic history or pain diagram (numerous shaded areas and nonanatomic distribution of symptoms)
 - b. Patient is unclear about relationship of symptoms to movement, activity, and other factors,
 - c. Symptoms are consistently diminished on weekends or vacations despite similar physical activity,
 - d. Symptoms of anxiety or depression are noted.

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