Backache: An Approach

Back Pain

It has been estimated that over three quarters of the world's population experiences back pain at some time in their lives. More than 90% of these are mechanical and resolve spontaneously within 1-2 weeks time. Clinically Back pain is of two types-Acute and Chronic.

Acute Low Back Pain is defined as pain of less than 12 weeks duration. Most of these patients exhibit "mechanical" symptoms. Pain that is aggravated by motion and relieved by rest.

Chronic Low Back Pain is defined as pain of more 12 weeks duration.

Approach To The Patient Of Back Pain

History taking The diagnosis of Back pain is based :

Mode of onset	Impulse pain
Injury	Leg parasethesia
Radiation	Numbness or weakness
Morning stiffness	

Sphincter disturbance and systemic symptoms with a careful examination of back

Types Of Back Pain

An understanding of the nature of the pain as described by the patient is the essential first step in evaluation

Local pain is caused by stretching of pain-sensitive structures that compress or irritate sensory nerve endings.

Pain referred to the back may arise from abdominal or pelvic viscera. The pain is usually described as primarily abdominal or pelvic but is accompanied by back pain and usually unaffected by posture. The patient may occasionally complain of back pain only.

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Pain of spinal origin may be located in the back or referred to the buttocks or legs. Diseases affecting the upper lumbar spine tend to refer pain to the lumbar region, groin, or anterior thighs. Diseases affecting the lower lumbar spine tend to produce pain referred to the buttocks, posterior thighs, or rarely calves / feet.

Radicular back pain is typically sharp and radiates from the spine to the leg within the territory of a nerve root. Coughing, sneezing, or voluntary contraction of abdominal muscles (lifting heavy objects or straining at stool) may elicit the radiating pain.

Pain associated with muscle spasm, although of obscure origin, is commonly associated with many spine disorders. The spasms are accompanied by abnormal posture, taut paraspinal muscles, and dull pain.

Back pain at rest or unassociated with specific postures should raise the index of suspicion for an underlying serious cause (e.g., spine tumor, fracture, infection, or referred pain from visceral structures). Some patients involved in accidents or work-related injuries may exaggerate their pain for the purpose of compensation or for psychological reasons.

Pain-sensitive structures in the spine include the vertebral body periosteum, dura, facet joints, and annulus fibrosus of the intervertebral disk, epidural veins, and the posterior longitudinal ligament. Damage to these nonneural structures may cause pain. The nucleus pulposus of the intervertebral disk is not pain-sensitive under normal circumstances. Pain sensation is conveyed by the sinuvertebral nerve that arises from the spinal nerve at each spine segment and re-enters the spinal canal through the intervertebral foramen at the same level. Disease of these diverse pain-sensitive spine structures may explain many cases of back pain without nerve root compression. The lumbar and cervical spines possess the greatest potential for movement and injury.

Examination of the Back The physical examination of a backache patient is not complete unless abdomen and rectum have also been included. Referred backache may be elicited during palpation of the abdomen (pancreatitis, abdominal aortic aneurysm) or percussion over the costo vertebral angles (pyelonephritis, adrenal disease, L1-L2 transverse process fracture).

Inspection may reveal lateral curvature of the spine (scoliosis) or an asymmetry in the appearance of the paraspinal muscles, suggesting muscle spasm. Tight/ bulging paraspinal muscles limit spinal motility; Forward bending being frequently limited.

SLR (Straight Leg Raising): In the supine position passive flexion of the thigh on the abdomen while the knee is extended produces stretching of the L5 and S1 nerve roots and the sciatic nerve, because the nerve passes posterior to the hip joint. Passive dorsiflexion of the foot during the maneuver adds to the stretch. While flexion to at least 80° is normally possible without causing pain, tight hamstrings commonly limit motion, may result in pain, and the patient will differentiate it from the back pain. This *straight leg-raising* (SLR) *sign* is positive if the maneuver reproduces the patient's usual back or limb pain. The patient may describe pain in the low back, buttocks, posterior thigh or lower leg, but the key feature is reproduction of the patient's usual pain. The *crossed* SLR sign is positive when performance of the maneuver on one leg reproduces the patient's pain symptoms in the opposite leg or buttocks. The nerve or nerve root lesion is always on the side of the pain. The *reverse* SLR sign is elicited by standing the patient next to the examination table and passively extending each leg while the patient continues to stand. This maneuver stretches the L2-L4 nerve roots and the femoral nerve because the nerves pass anterior to the hip. The reverse SLR test is positive if the maneuver reproduces the patient's usual back or limb pain.

A complete neurological examination must be done in every case of backache; findings will help decide the nerve root affected and surgical intervention. It must include a search for weakness, muscle atrophy, focal reflex changes, diminished sensation in the legs and signs of spinal cord injury.

INVESIGATIONS

Laboratory Studies Routine laboratory studies such as CBC, ESR and a Urinalysis are rarely needed for the initial evaluation of acute (<3 months), nonspecific, low back pain.

If risk factors for a serious underlying disease are present, then laboratory studies (guided by the history and examination) are indicated.

Imaging - Plain X-rays of the lumbar or cervical spine are helpful ONLY when risk factors for vertebral fracture (trauma, chronic steroid use) are present. *In the absence of risk factors, routine x-rays of the lumbar spine in the setting of acute, nonspecific, low back pain are wasted and rarely helpful.* MRI and CT-myelography have emerged as the radiologic tests of choice for evaluation of most serious diseases involving the spine.

Electromyography (EMG) can be used to assess the functional integrity of the peripheral nervous system in the setting of back pain.

CAUSES OF BACK PAIN

1. Mechanical causes

a) Intervertebral disc
b) Facet
c) Lumbar spinal stenosis
d) Paraspinal muscles
e) Sacroiliac joint
f) Spondylolysis/ Spondylolisthesis
g) Non-specific back pain

2. Rheumatological

a) Seronegative spondyloarthropathies

- Ankylosing spondylitis
- Psoriatic arthritis

Reactive spondyloarthropathy

i) Reiter's syndrome
ii) Enteropathic arthritis

Undifferentiated/Unclassified

b) Rheumatoid arthritis

c) Polymyalgia rheumatica

d) Nonarticular rheumatic disorders
i) Myofascial pain
ii) Fibromyalgia syndrome

3. Infections

a) Osteomyelitis including Pott's spine (tuberculosis)
b) Discitis
c) Epidural abscess

4. Neoplastic disease

a) Primary tumours of the spine
i) Multiple myeloma
ii) Other tumours of bone or cartilage e.g. Osteoid osteoma
b) Metastatic spinal disease

5. Vascular or hematologic

a) Abdominal aortic aneurysm(atherosclerotic or inflammatory)
i) Rupture
ii)Erosion of adjacent structures
iii)Dissection
b) Epidural hematoma
c) Hemoglobinopathy

6. Endocrine/metabolic

a) Osteoporosis - Primary or secondary
b) Paget's disease

7. Referred pain

a) Pelvic conditions

i) Endometriosis
ii) Torsion of a mass, cyst of fibroid
iii) Pelvic inflammatory disease
iv) Prostatitis
v) Cystitis

b) Abdominal conditions

i) Pancreas
ii) Posterior duodenal ulcers

8. Other nonmechanical causes

a) Hip joint or trochancteric bursa
b) Gullian-Barre syndrome
c) Meningeal irritation

9. Psychological factors

10. Malingering

Indications for intervertebral disk surgery:

(1) Progressive motor weakness from nerve root injury demonstrated on clinical examination or EMG,
(2) Bowel or bladder disturbance or other signs of spinal cord disease,
(3) Incapacitating nerve root pain despite conservative treatment for at least 4 weeks, and
(4) Recurrent incapacitating pain despite conservative treatment. The latter two criteria are more subjective and less well established than the others. Surgical treatment should also be considered if the pain and/or neurologic findings do not substantially improve over 4 to 12 weeks.

Surgery is always preceded by recent MRI to define the location and type of pathology. Earlier surgical procedure of partial hemilaminectomy with excision of the involved and prolapsed intervertebral disk is now done only in small centers. Microdiscectomy or disc removal using Holium LASER is the procedure of choice. This ensures faster (24-48 hours) mobilization and patient can be back to gainful employment within a short time.

Treatment

Acute Low Back Pain A practical approach to the management of low back pain is to consider acute and chronic presentations separately. Full recovery can be expected in 85% of adults with ALBP unaccompanied by leg pain.

Patient education is an important part of treatment. Studies reveal that patient satisfaction and the likelihood of follow-up increase when patients are educated about prognosis, treatment methods, activity modifications, and stress management strategies to prevent future exacerbations.

Chronic Low Back Pain Patients with CLBP account for 50% of back pain costs. The initial approach to these patients is similar to that for ALBP. The ultimate goal is to restore function to the greatest extent possible. ❑