Low Back Pain (L.B.P.)
How Do I Approach

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The area between lower costal margins above, and gluteal fold below, is considered as low back. The cause of low back pain is due to the involvement of structures in the low back area or referred pain from elsewhere usually abdomen and pelvis.

The economic burden in USA due to LBA is $50 billions annually. It is the second commonest cause for visits to doctor.

The life time prevalence in general population is 90% & 1% of US population is chronically disabled due to LBP.

Apart from skin, subcutaneous tissue, muscles, the pain sensitive structures of LBA are periostium of vertebrae, dura, facet joint, annulus fibrosus, epidural veins and the posterior longitudinal ligament.

FUNCTIONAL ANATOMY OF THE SPINE
The vertebral bodies (VB), separated by elastic inter vertebral discs (I.V.D), are held together by anterior and posterior longitudinal ligament. The IVD composed of pain insensitive - central soft gelatinous nucleus pulposus (NP) surrounded by hard cartillagionous-annulus fibrosus. The VB and IVD are the natural shock absorbers of the body due to their elastic nature which decreases with aging.

The vertebral arch consists of pedicels anteriorly, transverse processes laterally, laminae posteriorly, joined by a single spinous process. The power full back muscles and ligaments are attached to these processes. They are also called as Work Horses as most of the work load of the body is taken by these muscles. The arches are held together by the facet joint, formed by superior and inferior articular facet surfaces of the arch which bring stability to the spine. The nerve roots exit at the intervertibral foramen.

Causes
- Congenital/development
- Minor trauma
- Strain or Sprain
- Fractures
- Intervertebral disk Herniation
- Degenerative
  - Disk-osteophyte complex
  - Internal disk disruption
  - Spinal stenosis with neurogenic claudication
- Arthritis
  - Spondylosis
  - Facet or sacroiliac arthropathy
  - Autoimmune (eg., anklyosing spondylitis, Reiter`s syndrome)
- Neoplasms
- Infection / inflammation
- Metabolic
  - Osteoporosis-hyperparathyroidism, immobility
  - Osteosclerosis (e.g., paget`s disease)
- Vascular
  - Abdomen aortic aneurysm
  - Vertebral artery dissection
- Other
  - Referred pain from visceral disease
  - Postural
  - Psychiatric, malingering, chronic pain syndromes
The above causes of LBP can be grouped as follows:
1. Sprains, spasms musculofacial - 70%
2. LBP due to IVD herniation - 4%
3. Degenerative - 10%
4. Other causes - 16%

LUMBAR DISC DISEASE (LDD)
Even though LDD forms 4% of LBP causes, it is important to consider in differential diagnosis at the initial evaluation.
The NP prolapses (pushing the weakened AF posterior), protrudes through AF (herniation or disc rupture or slipped disc or torn disc) Extrudes (free fragment in spinal canal).
The cause is often unknown. It could be trivial sneeze or cough. The pain can due to
1. Proinflammatory cytokines
2. Nerve root compression
3. Diskogenic pain due to the diseased disc

It should be noted that pain can be there without root compression. In fact the mechanism of pain in LDD is still obscure. The pain management of LDD and the musculofacial spasms do not differ much. Where as LBP due to neoplasm’s, infections, fractures etc., need specific treatment of source of the disease.

APPROACH TO THE PATIENT
Identify initially the serious disorders (red flags) infection, Neoplasm, considering risk factors and comorbid conditions. Later differentiate radicular from non radicular and sclerotomal pain. The radicular pain classically - lancinating in the dermatome distribution, increasing by cough and sneezing. The straight leg rising (SLR), reverse SLR. Crossed SLR, Fabere tests are positive. In nonradicular or mechanical pain or pain due to spasms are associated with abnormal postures, dull pain with limited forward bending. The claudication pain due to lumbar canal stenosis is present while walking and standing but relieved on sitting. Where as in vascular claudication pain is present only on walking and relived on standing. In LDD the pain is present even while sitting.

INVESTIGATIONS
Red flags to be evaluated if there are risk factors and comorbid conditions. CT and MRI can be delayed in simple and mechanical causes of LBP. CT myelography, MRI are the choice of tests. MRI is superior for definition of soft tissue. CT myelography provides optimal imaging of lateral recess of the spinal canal and bony lesions. EMG studies are supplementary.
deficit; bowel bladder involvement and worsening sensory symptoms (Subjective).

Caution need to be observed while interpreting CT or MRI. Most of the time the radiological findings such as disc protrusion may not be the cause of LBP. 1/3 of Asymptomatic patients have MRI or CT evidence of disc abnormalities. In evaluation of LBP, the clinical features should guide the etiology and location of the site of the lesion. The radiological, EP studies are only supplementary or to rule out any serious spinal disorder.

Risk factors for recurrent LBP include female sex. Chronic widespread pain, obesity and psycho-social factors. Early treatment of the acute episode, exercise programs for long term, help in preventing chronic pain syndromes.

SUMMARY
LBP is a vague symptom with uncertain etiological and structural diagnosis in 50% of the cases, unlike headache where there is definite diagnostic criteria. The correlation of clinical features with radiological findings is not always concordant. The simple and logical way of approach of LBP is to evaluate initially for serious spinal disorder. Later whether radicular or nonradicular, optimum rest for two days is advised. Amitriptyline 10mg once or twice daily is adequate in most of the causes for relief of pain and muscle spasm. Carbamazapine 200mg may be added if root pain is obvious. After two days of rest, routine activity may be resumed - avoiding heavy works that strain the spine. Once the patient improved after three to four weeks, conditioning exercises of back muscles is recommended which to be continued for long and the medication to be withdrawn. Ultimately it is two days rest, Amitriptyline, exercise for very long time that would go a long way in the management of LBP. Analyzed methodically, treatment of LBP, IS SIMPLE

REFERENCES
6. VAN ALFEN N, VAN ENGELEN BG; The clinical spectrum of neuralgic amyotrophy In 246 cases Brain 129; 438.2006
8. The spine patient outcomes research trial (SPORT); a randomized trial. JAMA 296; 2441, 2006
10. Koes BW. BMJ 2006; 332; 1430- 1434