A PHYSIATRIST'S VIEW ON LOW BACK PAIN: PART II

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MUMBAI CITY AT NIGHT

Session 2

Objectives: Session 2

- Identify appropriate Diagnostic Tests as further work-up to confirm diagnosis
- Discuss Treatment Algorithms – conservative and invasive

Diagnostic tests

- Labs:
  - Usually not necessary unless suspect Rheumatologic process, Infection or Malignancy
  - CBC with differential
  - ESR/CRP
  - Urine for Bence Jones Protein
  - SPEP / UPEP
  - Rheumatologic labs

Imaging studies

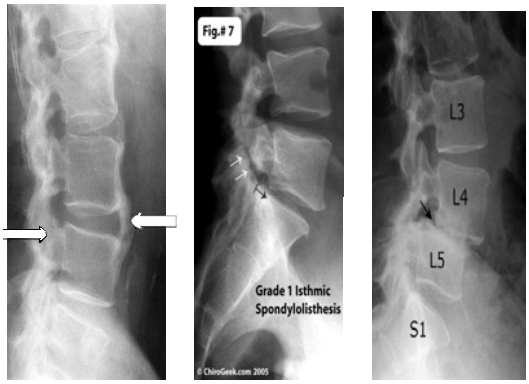
- X-rays
- MRI Scan LS spine, +/- Contrast ??
- EMG/NCV
- CT Scan, +/- Myelogram
- Bone Scan

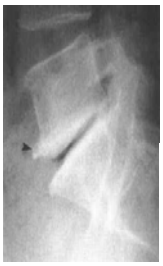
X-rays: Indications

- Back pain in patients > 55 years old
- h/o violent trauma
- Persistent night / rest pain
- h/o CA
- Systemic illness / weight loss
- Associated morning stiffness, iritis, colitis, skin rash, urethral discharge

X-rays:

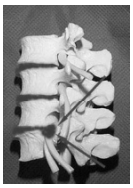
- Views:
  - AP/Lateral/Obliques
  - Flexion / Extension views
- Demonstrate:
  - Bony anatomy
  - Alignment
  - Fractures
  - DDD / DJD
  - Rarely, CA
  - Instability
  - Spondylolysis
  - Listhesis

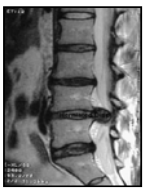


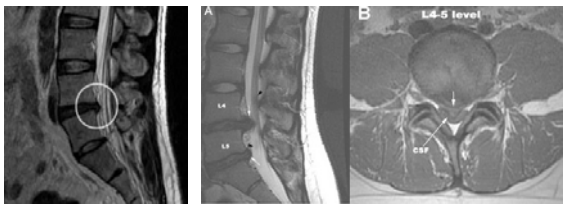


MRI Scan

- Mainly soft tissue pathology
- Also shows bony architecture
  - Disc: degeneration, herniation
  - Nerve roots: compression
  - Spinal stenosis: canal dimension
  - HIZ on T2: Annular tear
  - Intradural lesions





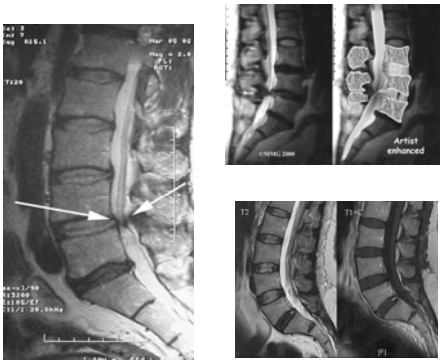


Definite indications of MRI

- Neurologic deficit
- Clinical suspicion of HNP: Radicular symptoms + Signs of nerve root tension +/- neurologic deficit
  - **Initially / after failed conservative care ??**
- Suspected Cord Compression

Relative indications of MRI

- "Red flags": clinical suspicion of CA / mets / infection
  - 8-12 weeks of persistent LBP, despite treatment
- Recurrent radicular symptoms suggestive of recurrent / residual HNP **(failed back)**
- Spinal stenosis ??



When to add contrast ?

- Suspect CA / mets (??)
- Infection (??)
- Failed back syndrome:
  - To differentiate a recurrent disc vs scar infiltration

Bone Scan ?

MRI: FALSE POSITIVE

MRI: Very sensitive, not specific in determining source of pain

- **MRI findings must be carefully correlated with a patient's clinical findings, as disc abnormalities are frequently found on MRI in asymptomatic patients**

CT Scan

- Superior detection of bony detail
- Indications for plain CT:
  - Contra-indication to MRI (pacemakers, orbital FB, mechanical valves ??, shrapnel ??)
  - Better visualize bony tumors (???)
  - Fractures
  - Rarely, to assess fusion mass

CT Myelogram

- Usually a test ordered by the neurosurgeons
- Indications:
  - C/I to MRI
  - Obese patients
  - Multiple herniations, polyradiculopathies
  - Decision making in spinal stenosis
  - Failed Back syndrome

Bone Scan: Indications

1. Suspicion of multiple **bony mets**
2. Early detection of **bone infection** (Indium Scan more specific for infection than Gallium / Technetium)
3. Unexplained bone pain (especially in high-powered athletes: stress fractures)

- **Radio-active dye used:**
  - $Indium^{111}$ usually used for infection
  - Technetium or Gallium for others

Role of EMG/NCS

- Extension of physical exam:
  - Localizes level, acuity & severity of nerve root involvement
- Co-relate anatomic findings with physiology

Indications of EMG/NCS

- Suspected radiculopathy / plexopathy, **poor correlation between their radicular symptoms and neuroimaging**
- **Multilevel disease** on neuroimaging
- **Recurrent LBP** after successful treatment

PUTTING IT ALL TOGETHER

"I'm stumped.
We'll have to wait for
the autopsy."

Differential Diagnosis

- Lumbar strain /MPS
- DDD, DJD
- Facet arthropathy
- SI joint dysfunction
- Piriformis Syndrome
- Radiculopathy
- Neurogenic Claudication (Central canal stenosis)
- Spondylosis
- Spondylolysis
- Spondylolisthesis
- Ankylosing spondylitis
- Seronegative arthritis

WHEN TO REFER FOR SURGICAL EVALUATION ??

Absolute Indications

1. ***Bowel / bladder incontinence (Cauda Equina Syndrome)***
   - **A true surgical emergency**
2. ***Worsening neurologic deficit***
3. ***Suspected spinal cord compression***

Relative Indications:

- Neurologic deficit that persists after 6 weeks of conservative therapy
- Persistent sciatica after 4-6weeks in a patient with positive SLR, consistent clinical findings, and favorable psychosocial circumstances

Relative Indications:

- Known Canal Stenosis with ***new*** radicular symptomatology and nerve root tension signs
- Failed Back Syndrome with recurrent symptoms suggestive of acute HNP

TREATMENT

STARTS WITH

PATIENT EDUCATION AND OUTLINING TREATMENT PLAN

"Why clone sheep? They ought to clone more doctors."

Principles of Treatment

- Start conservative,
  - Except if any of the "**red flags**" are present
- Weight loss, in obese patients
- Abdominal brace
  - Kinesthetic reminder
- Vocational issues – change jobs ??
- Proceed with more invasive / aggressive techniques if conservative measures fail

Treatment Options

- Complete Bed Rest (CBR)
- PT
- Medications
- Interventional pain procedures
- Surgery

MORE INVASIVE

Indications of Complete Bed Rest

- Lumbar sprain / strain
- Acute radicular syndrome secondary to HNP
  - Maximum period of Complete Bed Rest is 48-72 hours

Physical Therapy:

- Physical Therapy can:
  - Improve ROM
  - Reduce Pain & Spasm
  - Strengthen weak muscles
- Start with passive techniques
  - Active exercises not easily tolerated initially
  - Stretching, modalities including ice, heat, U/S, massage, TENS

Physical Therapy:

- Lumbar stabilization
  - Strengthens abdominals and paraspinals
  - Flexion based (Williams) vs Extension based (McEnzie)
  - If HNP: McEnzie extension exercises (centralize pain)
  - If LCS: Williams flexion exercises
- Back School: prevent recurrent episodes

Difficult to make scientific recommendation of one type of exercise versus another[6]

Therapy Prescription

- Name
- Diagnosis
- Therapy type (PT, OT e.g.)
- Instructions
- Frequency
- Duration
- Precautions
- Weight bearing restrictions, if applicable

Medications

- NSAIDs / Tylenol / Topicals:
  - mild to moderate pain
- Opioids:
  - moderate to severe pain
- Anticonvulsants
  - Neuropathic Pain
- Muscle relaxants
  - acute spasm
- Antidepressants ?? (Myofascial Pain)

INTERVENTION

1. TRIGGER POINT INJECTIONS
2. INTERVENTIONAL PAIN PROCEDURES
3. SURGERY

Trigger Point Injections

- Indicated for **myofascial pain**
  - Lidocaine / Bupivacaine – 1cc per Trigger Point
  - Dry needling
  - Botulinum toxin – controversy over efficacy
  - Knowledge of anatomy is important to identify trigger points and avoid complications with injection

INTERVENTIONAL PAIN PROCEDURES

Spine Injections:

- **FLUROSCOPY GUIDED INJECTIONS**
  - SI joint
  - Piriformis injections
  - Deep Joint injections (e.g. hip)

Spine Injections:

1. **Epidural steroids**
   - **Selective Nerve Root Block**
2. **Facet blocks (Medial Branch Blocks)**
   - **If successful, facet rhizotomy by using RFA (Radio-frequency ablation)**

New / Evolving Techniques

- IDET
- Chemonucleolysis
- Intra-discal Steroid injection
- Nucleoplasty
- Prolotherapy
- Intra-thecal therapy (Morphine, Ziconotide, clonidine, Baclofen)
- Spinal Cord Stimulator

EPIDURAL STEROIDS:

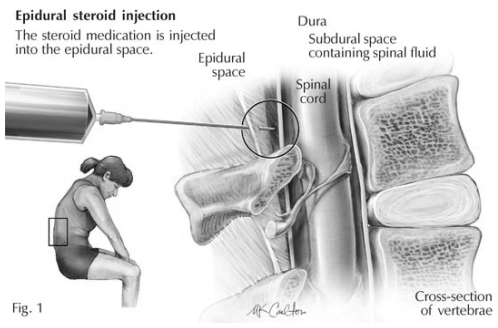
INDICATIONS:

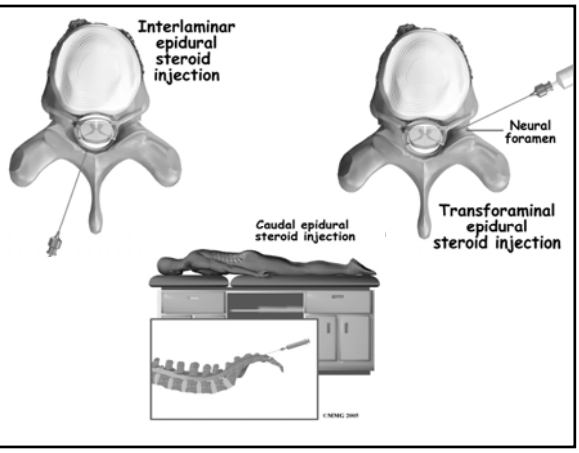
- Lumbar stenosis
- Acute HNP

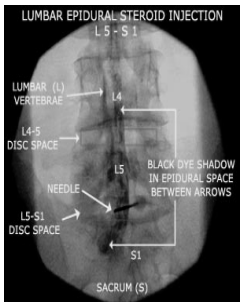
Routes of administration

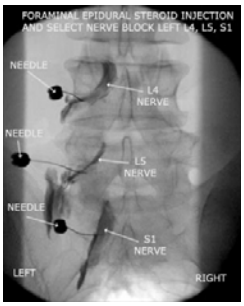
- Caudal
- Interlaminar
- Transforaminal

Selective Nerve Root Block



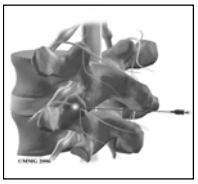


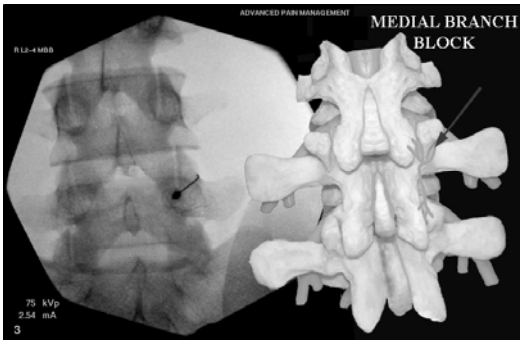




Facet Blocks:

- **Medial Branch Blocks**
- **Radio Frequency Ablation (Rhizotomy)**
- Indication:
- Facet arthritis





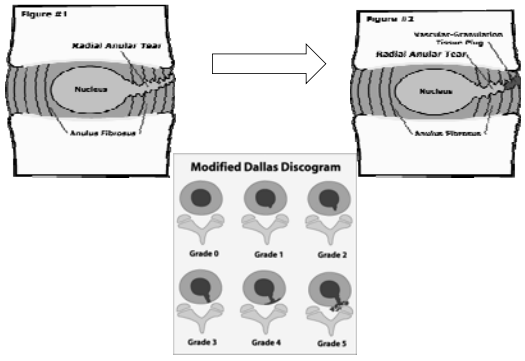
Interventional Pain (Contd):

- Discogram
- IDET
- Intra-thecal Morphine therapy

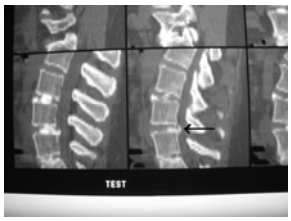
Discograms

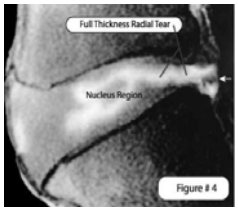
- Very controversial
- **Helps determine which disc or discs are the source of pain**
- Dye is injected under low pressure into the center of the disc. Then a CT scan is performed to observe the amount of structural changes in each disc

Discogram (contd)



Discogram (contd)



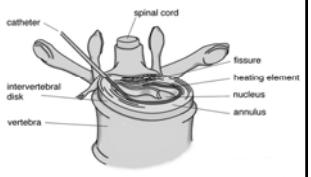


INTRA-DISCAL ELECTRO-THERMOCOAGULATION (IDET)

- Indication:
  - Low back pain caused by tears in the outer part of the intervertebral disc
- Minimally invasive treatment option
- Procedure:
  - Involves the use of heat to theoretically modify the collagen fibers of the disc and destroy the pain receptors in the area

INTRA-DISCAL ELECTRO-THERMOCOAGULATION (IDET)

- Place the catheter through a small incision on the back, into the disc space, under fluoroscopy
- Once in the disc space, the catheter heats the disc to a temperature of 90° C over the course of 15-20 minutes
- Pain relief may be seen in a few days following the procedure, or can take from six to eight weeks to be noticed
- In some patients, the pain relief may continue for up to six months or longer



ABSOLUTE Indications for Pain management referral

ACUTE HNP

- radicular pain not controlled with adequate trial of meds, no significant neurologic deficit (SNRB v LES)

CANAL STENOSIS

RECURRENT HNP

RELATIVE Indications for Pain management referral

DDD (CHRONIC +/- ACUTE EXACERBATIONS)

FAILED BACK SYNDROME

Interventional Pain Management

Evidence based Clinical Practice Guidelines from the American Pain Society (2009: SPINE, Vol. 34, Number 10, Pg 1066-1109)

SURGERY

- **DISCECTOMY**
  - LMD/percutaneous/laser
- **LAMINECTOMY with decompression**
- **+/- SPINAL FUSION**

Long term Results of Surgery[7]

- Surgery for radiculopathy with herniated lumbar disc and symptomatic spinal stenosis is associated with short-term benefits compared to nonsurgical therapy
- Benefits diminish with long-term follow-up in some trials
- For nonradicular back pain with common degenerative changes, fusion is no more effective than intensive rehabilitation, but associated with small to moderate benefits compared to standard nonsurgical therapy
- **Surgery for low back pain: a review of the evidence for an American Pain Society Clinical Practice Guideline.** Spine (Phila Pa 1976). 2009 May 1;34(10):1094-109

Algorithm

- Establish Diagnosis
  - 90% can be diagnosed with H&P alone
- Start conservative
  - Lifestyle modification(weight loss, smoking / EtOH cessation)
  - PT, NSAIDs, Muscle relaxants (as indicated)
- Allow 6 – 8 weeks for treatment

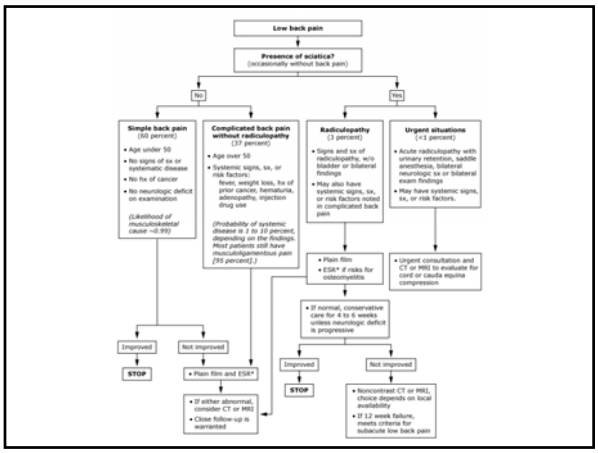
Algorithm

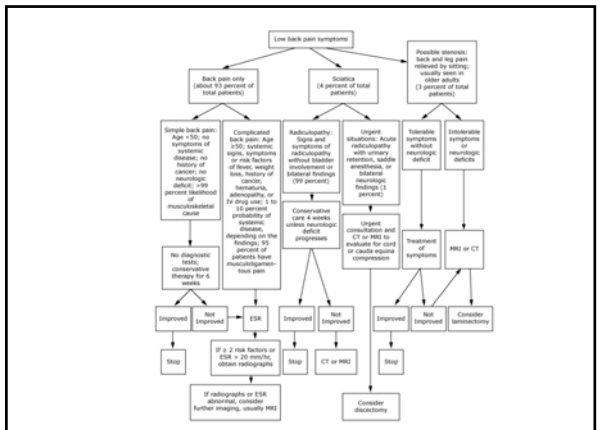
- Add Medications as indicated, judicious use of Opioids
  - Post-surgical, severe DDD, DJD
- ***Pain Management / Surgical referral, if indicated***
- 10% become chronic pain syndromes
  - Long acting Opioids usually required

Algorithm

- Consider Alternative treatment options
  - Osteopathic / Chiropractic referral
  - Acupuncture
  - Tai Chi, Pilates

Consider alternative treatment options





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