How to diagnose patients with low backache & Sciatica

Satishchandra Gore

Gore System

www.drgoreonline.com
WHEN DOCTORS DON’T LISTEN
How to Avoid Misdiagnoses and Unnecessary Tests
LEANA WEN, M.D., and JOSHUA KOSOWSKY, M.D.
Patient in pain …..
How to increase our certainty??
Patient talks, narrates, blabbers, tells stories - > Dr. listens

Pain has no objective sign!! So IT may be all narration
Best advice to patient: tell me what not why!!!!
Listen, Visualize and Palpate

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<th>DISCOVERY</th>
<th>EXPERIENCE</th>
<th>EXPLORATION</th>
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<td>SMELL</td>
<td>TASTE</td>
<td>TOUCH</td>
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<tr>
<td>SEE</td>
<td>LISTEN</td>
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What your mind does not know eyes don’t see

Invisible Pain
What You Can’t See Can Hurt

Don’t see visualize

Sunday, August 17, 2014
Fundamental question

• Where is the pain coming from?

• Why is it persisting?

• Kuslich study under local anesthesia but traditional surgery

• Yeung & Gore “surgery in awake aware patients by transforaminal stitchless endoscopy under LA”
In vivo visualization paradigm
Unified law of pain

• All pain is inflammation or end result of inflammation
• Detect confirm and monitor inflammation and pain!
• 3 cytokines prostaglandins, inter leukins, TNF alpha

• PAIN IS
Healthy aging degenerating

- Simplified definitions. validated. Published.
- Irrespective of calendar age

- **Healthy** is structure and function is normal
- **Aging** function starts slowing changing due to decreased diffusion
- **Degeneration** is additional structural failure eg: annular tear

- Which becomes symptomatic and vocal and “visible” to the seer.  NERVE SUPPLY
What makes patient vocal and pain “visible”: nerve supply
# Red flags

<table>
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<th>Red flags</th>
<th>Possible cause</th>
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<tr>
<td>Fever</td>
<td>Infection</td>
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<tr>
<td>Unexpected anal sphincter laxity</td>
<td>Cauda equina syndrome, spinal cord compression</td>
</tr>
<tr>
<td>Perianal/perineal sensory loss</td>
<td>Cauda equina syndrome, spinal cord compression</td>
</tr>
<tr>
<td>Major motor weakness</td>
<td>Nerve root compression</td>
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<tr>
<td>Point tenderness to percussion</td>
<td>Fracture or infection</td>
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<tr>
<td>Positive straight leg raise test result</td>
<td>L5 or S1 herniated disc</td>
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Common Problems in spine

- Back pain: discogenic and facet origin
- Leg pain: sciatica: chemical and mechanical
- Leg pain as claudication
- VCF and osteoporosis

- SPINE solutions
  - Safe precise innovative novel enabling!!! SPINE
Back pain presentation axial

Axial back pain
Horizontal or vertical
Associated spasm
Posture induced changes in pain
Assessing root mobility, where root is sensitised!!

Examination in standing and lying down
Static examination can not bring out dynamic complaints
Dynamic in time and location
Red flags: unrelenting, pain at night

Investigations need and interpretation
Back pain targets I

- Annular tear central non healing
Paraspinal back pain: MB of DR
• Facet bilateral two level for MB of DR
Leg pain 6 questions

Is pain along dermatomes?
If yes which root?
Is it disc?
If yes which disc?
Non invasive imaging
Invasive imaging

Answering:
Where is pain coming from?
Why is it persisting?
Progressive centralization of pain indicates suitability of exercise program.
Limitations of dermatomes: old unreliable dogma etc.
Can be OVERCOME: PALPATE
Limitations of “mute” imaging

• Image symptom paradox
• 30% either way
• Images look same but presentations are different
• How to overcome this uncertainty
• Deciphering images with added knowledge from our studies. See <- Visualize
Sciatica targets I

• Mechano sensitized root: SNRB and PALPATE for gore sign ... Sodium channel upregulation.
PALPATE elicit tenderness AND BLOCK LTDPN at sinus tarsi for L5 or sural for S1 sciatica pain.
Staging of sciatica 3 stages progressive, may jump.

Stage 1 of mechano [pressure] sensitization  80% outpatient
Stage 2 of mechanical compression 15 % SLR
Stage 3 of nerve dysfunction 5% standard neuro examination

**Limitation of Root mobility**

Indicates stretch sensitivity

**May improve if it is only inflammatory And Not mechanical**

Change from image and dermatome paradigm to NERVE paradigm : PALPATE

Listen
Visualize
Palpate
Increase certainty
Predictability
Dependability
2 sub sets

LATERAL Knee pain: BE AWARE
Heel pain: ouch after zzz

Maximum in morning

There is no way bone grows to cause pain!!
How to select patients for conservative treatment or surgery

Satishchandra Gore

Gore System
Outcome of discogenic sciatica & Pain generators

Origin and end point of sciatica

Depends on time frame and level of cytokines
- Nuclear Absorption
- Annular Healing
- Decreased Periradicular Inflammation

Positive
- Relief of pain
- Restoration of function

Negative
- Partial adherence
- Tethering of root
- Persistent pain
Conservative therapy and intervention

- Natural resolution and its monitoring
- Using anti-inflammatory forces and improve functional rehab

- Intervention to mask pain
- Intervention to correct structural failure

- Monitor our treatment and its outcome
There is a massive disc herniation that can pursue a favorable clinical course.

If early progress is shown, the long-term prognosis is very good and even massive disc herniations can be treated conservatively.

Who will show the progress? Images??

How will it be shown?

Unanswered questions!!!
• diagnostic ability of NEURO examination has not been explicitly investigated.
• *** 6 QUESTIONS
  – IS IT SCIATICA
  – IF YES WHICH ROOT?
  – IS IT DISC IF YES WHICH?
  – NON INVASIVE TEST THEN INVASIVE
  – WHERE IS PAIN COMING FROM?
  – WHY IS IT PERSISTING?
• limited overall diagnostic accuracy in detecting disc herniation with radiculopathy.
• Pooled diagnostic accuracy values of the tests were poor
  – lack of a standardized classification criterion for disc herniation,
  – variable psychometric properties of testing procedures,
  – complex pathoetiolog of lumbar disc herniation with radiculopathy
• Effects of nucleus pulposus on nerve root activity, mechanosensitivity, axonal morphology, sodium channel expression: Chen et al: spine 2004 29:1:17-25
  – Seven days' exposure of nerve root to nucleus pulposus potential neural conduction block +++ higher intensity of ectopic discharges on compression due to mechanical sensitization of nerve root.
  – whereas 42 days' exposure resulted in desensitization.
Chen et al.

- Numbness: Loss of neural activity propagated to the central nervous system
- Intense pain and paresthesia: Higher ectopic discharge rate
- More severe symptoms clinically during the acute stage of disc herniation.
- Abnormal accumulation of sodium channels at the tip of injured axons -> increases conductance of voltage-gated sodium channels.
Chen et al.

• Increased conductance -> lower **voltage threshold** rather than pressure threshold > neurons ectopic discharges.

• Hyperexcitability -> spontaneous and **movement-evoked** neuropathic paraesthesias, dysesthesias, and pain.
Clinical Relevance

• Nerve roots become sensitive to mechanical compression 7 days after exposure to NP.
• Mechanical stimulation to the nerve root can provoke abnormal neural activity that can manifest as pain and paresthetia.
• Mechanical stimulation includes compression from herniated disc and stretch of the nerve root as in the straight leg raising test.
Purpose: intensity and location

• Sciatica is proposed to be staged based on its mechanism of development or time wise evolution and intensity.
  – Inflammation
  – Mechanical compression
  – Loss of function

• Subsets based on location of pain in partial [subtotal] evolving or resolving sciatica.
Methods

• 70 consecutive Patients were recruited with acute [less than 3 to 6 weeks] sciatica in various stages of development. Early, late and resolving. 10 endoscopically operated patients recruited.

• Routine focused examination and palpation of sciatic nerve done.

• Use of distal block done at ankle.
Use of 2% plain lidocaine done distally

- Use of 2% plain lidocaine for a distal block at sinus tarsi over lateral branch of deep peroneal nerve or sural nerve.
- Response partial or total was noted.
- Follow-up was maintained for 1 month.
- Patients were investigated with imaging.
- Imaging findings were correlated with symptoms.
- Lack of correlation noted.
Results

• Nerve tenderness was noted in all patients of acute sciatica L5 or S1 at time frame <3-6 wks.
• Every patient had a positive change in clinical status with distal block.
• All post operative patients had full resolution of nerve tenderness by 6 weeks. Flare ups were correlated well with recurrent symptoms.
• Stages based on total relief of pain, partial relief with or without improvement in SLR, partial or no relief with neurodeficit.
• Subsets based on initial location of partial sciatica but tender nerve and full relief of pain with distal block.
Stage 1

• Sensitization:
  – 80% of patients
  – Severe nerve tenderness
  – SLR negative
  – NO significant sensory or motor loss.
  – Imaging study negative.
  – full relief of pain on distal block
  – Partial sensory motor loss relieved.
Stage 2

• Mechanical compromise:
  – 15% patients
  – Moderate nerve tenderness
  – positive SLR
  – 6% of them had relief of pain with increased range SLR after distal block.
  – Images positive that May or may not correlate well with symptoms.
Stage 3

• Nerve Dysfunction:
  – Nerve Desensitized
  – 5% Patients
  – Neurodeficit
  – SLR stretch may be positive.
  – changes after distal blocks like relief of tingling or and total reversal of motor deficit.
  – Images may correlate well.
significance

• Staging helps in treatment planning.
• Chemical sciatica can be clinically monitored and treated.
• Residual INFLAMMATION/pain post op?
• Inflammation part of Sciatica can be blocked by sodium channel blocker used distally.
• Probably if inflammation alone best responds to non operative conservation where natural resolution alone can relieve pain.
Locational subsets knee, heel.

- **KNEE PAIN**
  - pain over lateral aspect of either knee.
  - in spots or over limited area along lateral knee.
  - Inability to flex Knee fully.
  - associated tingling numbness on sitting cross legged.
  - Pain increasing with walking and then radiating along calf and lower leg.
  - Stiffness at knee and urge to extend knee after sitting for few minutes with legs crossed.
  - Stiff in morning for few minutes after getting up.
  - Presence or absence of low back pain.
Nerve supply of knee

- Knee is supplied in lateral aspect by 3 branches of common peroneal nerve,
- CPN is most affected component of sciatic nerve may be tender.
- Supply is through superior, inferior and recurrent genicular nerve.
- DPN Nerve is tender responds to distal block.
Heel pain

• Exclude trauma, organic local lesions in heel.
• When local nociception can be ruled out nerve mediated pain is commonest, well correlated with sural nerve, S1.
• Heel pain in significant numbers follows or precedes back ache.
• Sural block relieves pain in heel.
Advanced application of endoscopic technique
Patients for conservation

• Centralisation of pain on extension indicating a good annular integrity
• Inflammatory radicular pain with positive gore sign, responding to distal block
• Resolution of symptoms
• Sustained resolution and return to function
• May have relevant image resolution
• Natural history does not change
Indications for intervention

• Pain and inflammation not resolving naturally
• Resolution reaches a plateau
• Functional limitations in activities of daily life
• Specific complaints in sit, stand, walk and lay down and neuro deficit
• Symptoms match images
• Medical co morbidities are under control
• Patient FIT or ready to work towards functional rehab
Comparative Surgical Anatomy

In FBSS we target hidden zone of McNab. In the foramen and axilla.

Dorsal Approach

Foraminal Approach
Cannula used to shield exiting nerve

The beveled cannula tip provides a greater operative field.
Stitchless surgery under local anesthesia
Sciatica target II

- Herniated disc with migrated fragments: **
Target Claudication III

- Degenerative canal with SAP causing stenosis
GORE SYSTEM animation
CT MOVIE
Beating drg surgery


NOCICEPTOR IS A PSEUDO UNIPOLAR AXON
Stitchless under local anesthesia.
How to speak with patient so they listen!!

Guide for Drs.

- **You** set agenda for discussion
- Objectively identify pain.
- Remove uncertainty from clinical diagnosis,
- overcome image symptom paradox,
- be certain about treatment outcomes.
- Answer queries on **YOUR terms**:
  - what is cause of my pain, how can I improve, do I need more than medication?, best surgery solution?
Summary

- Listen visualize and palpate
- Pain in back and leg is caused as a response of nervous system to degenerative changes [includes structural failure].
- Detection, confirmation and monitoring of sciatica is possible with gore sign.
- Stitchless disc surgery under local anesthesia is possible with high degree of success [up to 93%] with gore system.