Low Back Pain (LBP) with Lower Limb Pain (LLP) “Neurogenic” or “Myogenic”?

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Department of Family Medicine in Haifa, Israel
Chairman of the Israel Society of Musculoskeletal Medicine
LBP and LLP - HISTORY

Mr. A

• 45 y.o male m+2
• Heavy smoker, not physically active, sedentary job
• Patient reports 2 weeks of mild low back pain, started after helping his son move to a new apartment...
• Currently he reports 2 days of severe low back pain with radiation to his leg (8/10)

Mrs. B

• 39 y.o female m+2
• Healthy, pregnant 32 weeks, works as a teacher
• Mild low back pain (2-3/10) since the first trimester
• Started to practice Pilates a month ago to ease her pain
• Currently she reports 2 days of severe low back pain with radiation to her leg (8/10)
LBP and LLP - HISTORY

Red Flags

- Role out Red Flags
  - Age not < 20 or > 55
  - No significant recent trauma
  - No history of Malignant disease
  - Not HIV and immune compromised
  - No systemic Stx, Ctx or IV drug users
  - No systemic signs: weight loss, fever etc.
  - No severe constant night pain
  - No progressive neurological signs

- Roles out fracture, infection, malignancy and rheumatic disease
LBP and LLP - HISTORY

Mr. A

• No red flags
• Back pain - dull pain, mainly in mid-line at the level of L5, Walking and coughing increases the pain, bed rest decreases it.
• Leg pain - Lancinating pain, along the posterior thigh and cuff
• Numbness – L5 distribution

Mrs. B

• No red flags
• Back Pain – deep aching pain around the buttock and the sacrum. Turning in bed and sneezing increases the pain, sleep decreases it.
• Leg pain – deep pain, feels like pressure in the lateral thigh and leg (above the ankle)
• Numbness - inconsistent
LBP and LLP - HISTORY

Mr. A

What is the most likely diagnosis?

Mrs. B

What is the most likely diagnosis?
Sciatica has been known to physicians since antiquity. It is pain that radiates from the buttock downward along the course of the sciatic nerve… Mixter and Barr extended previous observations to establish in 1934 that the principal source is compression of a lumbar nerve root by disk material…

Low back pain with lower limb pain = SCIATICA = Disk pathology

1934 2015

Sciatica - Review Article - The Lancet (May 1941)
KELLGREN et al

“… An accurate diagnosis can be made in cases of so-called sciatica….

Out of 70 cases investigated, 50 were found to be suffering from ligamentous or muscular lesions, 15 from displacement of an inter-vertebral disc and 5 from various neurological diseases

Only 15 out of 70 patient (21%) with low back pain and lower limb pain were diagnosed with herniated disc

http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2800%2995144-4/abstract
On the definitions and physiology of back pain, referred pain, and radicular pain

Back Pain - Review Article - Pain (2009)
Bogduk N. 2009

Failure to distinguish radicular pain from somatic referred pain may lead to misdiagnosis and thereby mismanagement.

Somatic referred pain are common, but radicular pain is not. When radicular pain has been strictly defined, its prevalence is less than 12%. Mistaking somatic referred pain for radicular pain creates the erroneous impression that radicular pain is more common.

Studies on the prevalence of radicular pain are not reliable.

https://my.parker.edu/ICS/icsfs/PAIN_ARTICLE.pdf?target=c6818277-d1e2-491a-8fea-e820cbdac986
Classification of chronic pain - IASP 2011
Second edition (Revised)

Sciatica - This term is an anachronism and should be abandoned. It stems from an era when the mechanisms of referred pain and radicular pain were poorly understood…

Only pain that is evoked by stimulating the nerve roots is a radicular pain. There is no justification on physiological grounds for equating sciatica and referred pain. The two are distinct in mechanism and quality…

Pain in the lower limb should be described specifically as either referred pain or radicular pain. In cases of doubt say - low back pain with lower limb pain

https://www.iasp-pain.org/files/Content/ContentFolders/Publications2/ClassificationofChronicPain/PART_I-C.pdf
On the definitions and physiology of Back Pain, Referred Pain, and Radicular Pain

Back Pain - Review Article - Pain (2009)
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- **Somatic Referred pain** = Myofascial pain syndrome
  - pain caused by active TrP in specific muscle

- **Radicular Pain** = Neuropathic pain
  - Pain caused by ectopic sciatic nerve shooting

- **Radiculopathy** = neuropathy other than pain
  - Sensory - numbness
  - Motor - muscle weakness
  - Diminished reflexes - either sensory and/or motor involvement

https://my.parker.edu/ICS/icsfs/PAIN_ARTICLE.pdf?target=c6818277-d1e2-491a-8fea-e820cbdac986

Touching the pain
The Israeli Society of Musculoskeletal Medicine
MYOFACIAL PAIN - PATHOGENESIS

The Trigger Point (TrP) complex

- **Contraction knots**
  Muscle fibers whose sarcomeres are severely contracted at the area of the endplate zone (involuntary chronic contraction).

- **Trigger points** (TrPs)
  Loci found in the endplate zone, that contains numerous contraction knots.

- **Taut bands**
  Stretched muscle fibers distal from the TrP towards the attachment.
For radicular pain – 2 components must be together:

- **local pressure**
  - (on nerve root or dorsal ganglion)
- **Inflammation**

Valat et al. (2010) - Sciatica - Best practice and research clinical rheumatology

http://www.bprclinrheum.com/article/S1521-6942(09)00141-7/abstract
LBP and LLP - PHYSICAL EXAMINATION

Mr. A
- Obesity BMI = 32
- Antalgic gait
- Tendon reflexes - normal
- Reduced range of motion of lumbar flexion
- No muscle weakness
- SLR positive at 40°

Mrs. B
- Pregnancy 32 w
- Antalgic gait
- Tendon reflexes - normal
- Reduced range of motion of lumbar flexion
- No muscle weakness
- SLR positive at 40°
LBP and LLP - PHYSICAL EXAMINATION

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Sciatica - Review Article - NEJM (March 2015)
Allan H. Ropper, M.D, Ross D. Zafonte, D.O

**SLR – Straight leg raising**
Ipsi-lateral back pain and radicular Pain below the knee at 30-70° (High sensitivity low specificity)

Herniated disk at L4–L5 compressing L5 nerve root

**Lasègue’s test**
Increased pain on dorsi-flexion of the patient’s foot (Increases sensitivity of the test)

**Fajersztajn’s test**
contra-lateral SLR (High specificity low sensitivity)

Physical examination for lumbar radiculopathy due to disc herniation in patients with LBP – Cochrane Database 2010

Van Der Windat et al.

When used in isolation, current evidence indicates poor diagnostic performance of most physical tests used to identify lumbar disc herniation…

LBP and LLP - IMAGING

Mr. A

Lumbar MRI
L4-5: Herniated disk.
Compression of the right L5 nerve root can be seen as it exits the neural foramen

Mrs. B

Lumbar MRI
L4-5: Herniated disk.
Compression of the right L5 nerve root can be seen as it exits the neural foramen
LBP and LLP - IMAGING

Herniated disk. Compression

Nerve root
Herniated disk. Compression

Nerve root
What is the most likely diagnosis?
LBP and LLP - IMAGING

Point prevalence of herniated disc in healthy subjects

Herniated Disc on CT/MRI in Normal Subjects

Adapted from: Bonica’s Management of Pain 3rd edition, 2009
The natural history of disk herniation – resolution!

2006 - 2010

76% - less than a year.
LBP and LLP - EMG

Sciatica - Review Article - NEJM (March 2015)
Allan H. Ropper, M.D, Ross D. Zafonte, D.O

The role if EMG

EMG can be **normal** in radicular pain **without** radiculopathy

LBP and LLP - EMG

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LBP and LLP - PHYSICAL EXAMINATION

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- “Jump sign” - positive (sensitive trigger points) above the Gluteus muscle

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What is the most likely diagnosis?
Is there an association between lumbo-sacral radiculopathy and painful Gluteal TrPs? - A cross sectional study

American Journal of Physical Medicine & Rehabilitation - 2015

Farhad Adelmanesh et al.

RADICULAR PAIN with MYOFASCIAL PAIN

Association between radiculopathy and Gluteal TrPs...

Objective: To compare the prevalence of Gluteal trigger point in patients with radicular pain + radiculopathy with that in healthy volunteers.

Study design:

- **271 patients with LBP and LLP +**
  - History
  - Physical examination
  - Imaging (lumber MRI)
  - EMG
  
- **152 healthy volunteers**

All were examined for Gluteal TrP (with algometry)

**TABLE 3** Concordance between side of the GTrPs and patients’ complaint

<table>
<thead>
<tr>
<th>Side of Complaint</th>
<th>None</th>
<th>Right</th>
<th>Left</th>
<th>Bilateral</th>
<th>Total</th>
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<tbody>
<tr>
<td>Healthy</td>
<td>149</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>152</td>
</tr>
<tr>
<td>(98%)</td>
<td>(0%)</td>
<td>(0.7%)</td>
<td>(1.3%)</td>
<td>(100.0%)</td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>20</td>
<td>86</td>
<td>4</td>
<td>3</td>
<td>113</td>
</tr>
<tr>
<td>(17.7%)</td>
<td>(76.1%)</td>
<td>(3.5%)</td>
<td>(2.7%)</td>
<td>(100.0%)</td>
<td></td>
</tr>
<tr>
<td>Left</td>
<td>20</td>
<td>5</td>
<td>70</td>
<td>1</td>
<td>96</td>
</tr>
<tr>
<td>(20.8%)</td>
<td>(5.2%)</td>
<td>(72.9%)</td>
<td>(1.0%)</td>
<td>(100.0%)</td>
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</tr>
<tr>
<td>Bilateral</td>
<td>24</td>
<td>5</td>
<td>9</td>
<td>24</td>
<td>62</td>
</tr>
<tr>
<td>(38.7%)</td>
<td>(8.1%)</td>
<td>(14.5%)</td>
<td>(38.7%)</td>
<td>(100.0%)</td>
<td></td>
</tr>
</tbody>
</table>

Association between radiculopathy and Gluteal TrPs...

What is the most likely diagnosis?
Is there an association between lumbo-sacral radiculopathy and painful Gluteal TrPs?

Yes!

The missing link of the MYOFASCIAL ENIGMA

LOW BACK PAIN with LOWER LIMB PAIN

Take Home Messages

- LBP with LLP is very common
- LBP with LLP causes significant disability and suffering
- Most patients with LBP+LLP have Myofascial pain
- Only small minority of patients with LBP+LLP have radicular pain
- Up to $\frac{3}{4}$ of the patients with radicular pain have myofascial component as well
LOW BACK PAIN with LOWER LIMB PAIN

Take Home Messages

• No matter what the cause is, LBP+LLP is very painful!!
• No matter what the cause is, LBP+LLP the prognosis is good!!
Questions ?
Dry Needling Course
Free Online Course
“The Theory of Myofascial Pain”
1st International Dry Needling Course
21-22 February 2018 Tel-Aviv