Spinal Pain in Older Adults

Differential Diagnosis

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Spinemobility Research & Resource Centre
Not-for-Profit Organization
Agenda

• Differential diagnosis of common spinal pain syndromes (45 min)
  – Focus on older adults using case studies
  – Management considerations

• Q & A (15 min)

• Outcomes
  – increase knowledge and skills
  – right diagnosis-right treatment
Diagnosis-Spine Pain

Classification- Pain Generator?

1. Non specific

2. Specific
Diagnosis- Challenges

Older Adult – Back and Leg Pain with Limited Walking Ability
Case DR: History

- D.R. Age 74 retired lawyer
- Long history of LBP
- 1 1/2 years of posterior buttock to calf pain bilaterally with standing and walking (VAS 9/10)
- With limited walking to few blocks
- Sitting/stoop posture and lying down immediate relief
- No night pain
- HBP, CHD (stent), OA knees
- Lyrica and 5-6 Tylenol daily
Case DR: Physical Exam

- Stands slight flexion
- ROM L/Sp flexion full, limited and painful extension
- LE sensation/strength normal
- SLR normal, no nerve tension signs
- DTR could not be elicited
- No atrophy
- Balance normal

- MRI multilevel DDD, DJD, severe central stenosis L5-S1

- Lower extremity Doppler normal
Neurogenic Claudication due to Lumbar Spinal Stenosis

Definitions/ Prevalence/Burden

Patho-anatomical classification
1. Congenital
2. Spondylolisthesis
3. Iatrogenic
4. Other diseases/metabolic
5. Acquired- degenerative joint/ disc disease
Position and Epidural Pressure in LSS

Takahashi et al, Spine 1995
Diagnosis

Diagnostic Criteria – Most Useful

• Age > 70
• Age < 60
• Bilateral buttock or leg pain
• No pain when seated
• Symptoms worse standing/walking
• Symptoms improve when bending forward
• Positive Rhomberg / wide stance gait
• Urinary disturbances

Suri et al, JAMA 2010
Management

Neurogenic Claudication due Lumbar Spinal Stenosis
• Structured multimodal (workbook/video/pedometer)
• Stationary bike
• Manual therapy
• Home exercises
  - flexion
  - strength
  - nerve flossing
• Self- management strategies (life)

Chow & Ammendolia 2015
Case AK: History

- A. K Age 73 retired PH Nurse
- Chronic LBP, episodic sciatica
- 2 years of posterior calf pain bilaterally after few minutes of walking- limited walking ability
- Sitting and lying down immediate relief
- HBP, previous history of Raynaud’s and Sjogrens
- Recent skin infection large toe
- Doppler test equivocal
Case A.K: Physical Exam

- Difficulty balance testing
- ROM L/Sp full flexion, limited and painful extension
- LE sensation/strength normal
- SLR - no nerve tension signs, no atrophy
- Hip exam normal
- Dorsalis pedis pulses?

- MRI severe multilevel DDD, DJD, severe lateral stenosis L4-5, L5-S1

- No response to Tx, bike not compliant

- Another lower extremity Doppler
Peripheral Vascular Disease (PAD)

• Definitions
• Patho-physiology
• Prevalence
  – 26% of patients with NC have PAD
• Risk factors
  – HBP, high cholesterol, diabetes, smoking

Skin discolouration /Infections lower extremities- nail bed

Imagama 2011, Collins 2007
Diagnosis (PAD)

- 8% patients with no PAD have absent Dorsalis pedis pulse
- 10% of patients with PAD have normal pulses
- Ankle-brachial or toe-brachial pulse ratio (<0.9)
- Doppler tests - patients with 50% occlusion have sensitivity of 80-89% and specificity 89-99%
- Negative shopping cart sign or forward leaning bike

Management (PAD)

- Referral
- Co-management
Case JP: History

- Mr. JP. Age 62 consultant previous Olympic athlete
- 30 y history of LBP
- 9 month history progressive right leg pain with walking-limited to 20 m, then limping
- Back, lateral hip, buttock, occasional to groin, knee and foot
- Sitting/stoop posture immediate relief
- Urinary hesitancy -15 years
- Neuropathic and narcotics meds

- Hip X-ray – normal Patient wife radiologist
Case JP: Physical Exam

- Stands flexed posture and Lt list
- ROM L/Sp full flexion, limited and painful extension
- LE sensation/strength normal
- SLR and femoral nl, no nerve tension signs,
- Limited internal rot/flex Rt hip with minimal pain
- Mild atrophy Rt calf and hamstring muscles

- MRI congenital narrowed pedicles severe multilevel DDD, DJD, severe Rt foraminal stenosis L2-L3 with neuro-compression.

- No success Tx- another Hip X-ray
Hip OA

- Definitions
- Patho-physiology
- Prevalence
  
  27% adults > 45y radiographic hip OA
  - of which 9% symptomatic

Hip OA

- Groin pain 7 times more likely to be hip or hip-spine than spine alone
- Study using fluoroscopic guided injections - buttock pain (71%) most common location for referred hip pathology followed by combined thigh and groin (55%)
- 47% hip OA report pain below knee
- Hip exam –internal rot and flexion, limping gait, night pain, Trendleberg gait
- Thomas test- hip contractures
- Atrophy- disuse vs neurogenic
- Fluoroscopic guided injections of hip for dx not as useful for spine

Management Hip-OA

- Referral (based on pain and limitations)
- Manual therapy
- Home based exercise
  - flexibility
  - strength
- Self-management strategies
Case NK: History

- Ms. NK  Age 71 retired PT
- Chronic history of LBP
- 18 month history back, left lat thigh pain worse with walking, stair climbing, getting up from chair and lying in bed
  - radiates to LT knee with walk-limited walking to few blocks then limps
- Epidural injections, massage, NSAIDS, acu no help.
Case NK: Physical Exam

- Stands flat lordosis and mild scoliosis
- ROM L/Sp mild LBP with flexion, mod limited and painful extension
- LE sensation/strength normal
- SLR and femoral n normal, no nerve tension signs,
- External rot Lt end range lat thigh/back pain
- Moderate-severe tenderness Greater Trochanter Lt

- MRI moderate multilevel DDD, DJD, with partial sequestered disc Rt L4-L5 with central disc herniation with moderate lateral recess stenosis and compression of Rt L5 and S1 nerve
Greater Trochanter Pain Syndrome (GTPS)

- Definitions
- Patho-physiology
- Prevalence
  - 10-25% of population-higher in elderly
  - second leading cause of adult hip pain
- Risk factors
  - Older, female, ITB pain, obesity and LBP

Diagnosis- GTPS

- Deep palpation- jump sign
- Active and resisted abduction of hip
- Passive FABERE
- Trendelenberg sign- Standing one leg
- Stair climbing vs NC
- Lying on affected side- night pain
- Injections (steroid/anesthetic)

Management GTPS

• Deep x-fiber/stripping massage
• Manual therapy
  - Contract-relax stretch
  - Trigger point therapy
• Home ice & Stretch & Strengthening
• Injections (steroid/anesthetic)

Case ES: History

- Ms. Age 68 retired
- 1 year of bilateral buttock to ankle pain and anterior thigh pain with standing and walking (limited 10min) – no LBP
- Steady numbness soles of feet bilaterally
- Relief with sitting and shopping cart
- Mild loss of control bladder
- 20 years ago cervical disc herniation with surgery and fusion C5-6

Physical exam
- Unremarkable- Lumbar Flex –full
- Limited response to treatment for NC
Other Diagnoses

• Cervical Stenosis (myelopathy)
• Diabetic Neuropathy
• Hypothyroidism
• Meralgia Paraesthetica
• Nutritional deficiencies

Nerve conduction/EMG/Blood Tests
Management – treat symptoms and underlying cause
Case KW: History

- Mr. KW Age 45 retail
- Recurrent history of LBP
- 6 weeks history moderate radiating left leg pain to lateral foot.
- Sitting, driving aggravates
- Walking initially better, prolonged walking worse
- Previous episodes
- Otherwise fit and healthy
Case KW: Physical Exam

- Antalgic right with left knee bent
- ROM L/sp – limited FF to knees by radiating left leg pain
- Limited sitting and supine SLR with positive nerve tension
- Positive X SLR
- Weak eversion of the left foot
- Atrophy of left calf

- MRI disc herniation left L5-S1 compression left S1 nerve
Lumbar Radiculopathy (LDH)

- Definitions
  Patho-physiology
- Common pain location
- Prevalence
  2-4% of LBP

Mixer and Barr 1934, Kobayshi 2010, Deyo 2001, Rainville 2013
Diagnosis- Lumbar Radiculopathy

• Diagnostic criteria

 Straight Leg Raising (SLR) test
  – high sensitivity 0.92, 95% CI: 0.87 to 0.95
  – low specificity 0.28, 95% CI: 0.18 to 0.40
  – X-SLR -high specificity 0.90, 95%CI: 0.85 to 0.94 low sensitivity 0.28, 95% CI: 0.22 to 0.35

Other nerve tension signs, DTR, dermatomes, myotomes, atrophy

Imaging LSS and LDH

Lumbar Spinal Stenosis
- up to 30% of asymptomatic individuals > age 55 have moderate lumbar stenosis

Lumbar Disc Herniation
- 20% asymptomatic individuals < age 60
- 36% asymptomatic individuals > age 60

Boden 1990, Tong 2006
## Neurogenic Claudication (LSS) vs. Lumbar Radiculopathy (LHD)

<table>
<thead>
<tr>
<th></th>
<th>NC</th>
<th>LR</th>
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<tbody>
<tr>
<td><strong>Demographics</strong></td>
<td>&gt; 65</td>
<td>40s</td>
</tr>
<tr>
<td><strong>Lumbar flexion</strong></td>
<td>Relief</td>
<td>Worse</td>
</tr>
<tr>
<td><strong>Sitting</strong></td>
<td>Relief</td>
<td>Worse</td>
</tr>
<tr>
<td><strong>Level</strong></td>
<td>L4-5</td>
<td>L5-S1</td>
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<tr>
<td><strong>SLR</strong></td>
<td>Negative</td>
<td>Positive</td>
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Suri 2012, Katz 2008, Rainville 2013
Management LDH

• Education and Pain Management
• Manual Therapy
• Home exercise
  – Neural mobilization
  – Extension based
  – Strength training
• Self-management strategies
Case PT

- Mr. IG age 68
- 30 year history of LBP after tennis injury.
- Pain located across lumbo-sacral region without lower extremity symptoms.
- Worse with activity and excessive sitting
- No bladder or bowel abnormalities
- Otherwise healthy

- Full flexion, extension reproduces symptoms
- Poor Muscle tone -tender over L5-S1
- Neuro exam -no abnormalities
- Imaging moderate-severe DDD & DJD
<table>
<thead>
<tr>
<th>Condition</th>
<th>Red Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer or Infection</td>
<td>History of cancer, unexplained weight loss, immunosuppression, urinary infection, IV drug use, prolonged corticosteroids, pain not improved with rest, especially for patient over age 50.</td>
</tr>
<tr>
<td>Spinal fracture</td>
<td>History of age-specific significant trauma, age &gt;70, prolonged steroid use.</td>
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<tr>
<td>Cauda equina or Severe neurologic compromise</td>
<td>Acute onset of urinary retention or overflow incontinence, loss of anal sphincter tone or fecal incontinence, saddle anesthesia, global or progressive motor weakness in the lower limbs.</td>
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<tr>
<td>Spinal osteomyelitis</td>
<td>IV drug abuse, UI or skin infection</td>
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<tr>
<td>Herniated disc</td>
<td>Sciatica</td>
</tr>
<tr>
<td>Spinal stenosis</td>
<td>Pseudoclaudication, age &gt;= 50</td>
</tr>
<tr>
<td>Ankylosing spondylitis</td>
<td>Age at onset &lt;= 40 pain not relieved supine morning back stiffness pain duration &gt;= three months</td>
</tr>
</tbody>
</table>
Yellow Flags

Psychosocial

• Fear of re-injury/ activity avoidance
• Catastrophizing
• Depressed mood
• Negative expectation
• Passive coping
• Pain focused
• Lack of social network

Ramond 2011, Nicholas 2011, Steenstra 2005
Chronic Mechanical Spine Pain

Chronic Persistent Low Back Pain

- Pain generator?
- Pain pattern is key for managing
- Manual therapy
- Structured home based exercise
- Self-management strategies
Management Persistent LBP

• Manual therapy
  - SMT/mobilization
  - contract/relax
  - trigger point therapy
• Home exercises (based on pain pattern)
  - aerobic/flexibility/strength/endurance
• Self-management
  - sit/drive/computer/stand/walk/lift/sleep
• Psychosocial interventions
Summary Spinal Pain

• Diagnostic Challenges
  Older adult – LBP, leg pain, limited walking
  - NC, PAD, OA Hip, Hip-Spine Syndrome, GTPS, Cervical SS
  - Persistent (Mechanical) LBP
    - correct diagnosis (Hx and PE)
    - usually via exclusion
    - Imaging not helpful

• Management - focus on underlying mechanisms
  usually multi-modal
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Questions?

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