Learning Objectives

• Identify the following two syndromes
• Recognize aspects of the osteopathic structural exam that may be helpful in treating these syndromes
• Recognize how to perform a 2-5 min OMT treatment with reference to these two syndromes
• Perform the exercises/stretches on the Patient Companion Hand Out
• Explain/demo those exercises to a partner and patients.

Patient 1

• 62 y/o female c/o diffuse achy back pain that began 2 weeks ago. Patient was “stooping” over quite a bit working in her garden. The following day the back pain began and she noticed that she had pain when going from sitting to standing. It also seems difficult to fully stand upright over these past 2 weeks. Denies numbness, radiation of pain to LE or paresthesias.
Psoas Syndrome

- Definition: muscular imbalance, strain, spasm, tendonitis, or flexion contracture of the iliopsoas muscle (consisting of the iliac and psoas major) (19)

Potential “Red Flag” Differential

- abdominal aortic aneurysm
- intra-abdominal abscess
- appendicitis
- diverticulitis
- inguinal hernia
- prostate/ovarian/sigmoid colon cancer (malignant psoas syndrome)
- prostatitis,
- salpingitis
- ureteral calculi
- Crohn’s disease
- femoral bursitis
- arthritis of the hip

Brief Anatomy Review

- Originates anterior to transverse processes and the vertebral bodies and discs of T12-L5
- Inserts into lesser trochanter of femur via a common tendon
- Major flexor of trunk at pelvis, lateral flexion and acts to flex thigh
- Active postural muscle, maintains upright posture (9)
In Motion

Function per EMG

- EMG studies showed intermittent EMG activity with upright sitting and standing (9, 13), also marked activity from lying to sitting and during gait before toe-off through early swing phase
- In lifting the iliopsoas has an important function in spinal support as it counteracts the extension movement by thoracolumbar fascia.

Presentation

- Diffuse achy low back pain that may spread to rest of low back, lower thoracic region, groin, gluteal and lateral hip region.
- Usually improved with sitting, worse with rising from a seated to standing position, prolonged standing and twisting at waist without moving lower extremity.
History

• May occur if the patient assumed any position that may have shortened the origin and insertion of the iliopsoas muscle and then stood up quickly or suddenly
• (i.e. bending over in the garden, working on the house)
• Overuse (i.e. running, dancers) (15)

Problem

• Just as in the case of “LBP” having a myriad range of causes and treatment- same holds true for the psoas syndrome
• Seems that lumbar spine pathology may cause the psoas mm to change its function- get mm imbalance – therefore it may be necessary to first inhibit the mm and then reeducate it which requires appropriate stretching and functional strengthening.(11)
• Other sources point to correcting gait (11)
• Referral to PT may be warranted- inhibition

Problem

• Unilateral reduction in psoas may be secondary to atrophy due to disuse or to compensatory hypertrophy of the mm on the other side (12)
• What is clear is that “the clinical significance in muscle size has yet to be proven. Indeed, it remains to be determined whether muscle control problems cause LBP or if LBP is a trigger for muscle control problems. There remains debate about whether specific localized stabilizing exercises are more effective than more general exercise fitness programs for back rehab. (12)
• Atrophy of the multifidus has been used as a rationale for spine stabilizing exercises so should we investigate selective strength training of the psosas. (12)
Osteopathic Structural/Physical Exam

- Lumbar segmental exam
- Standing (IS SD) and seated (SI SD) flexion tests
- IS Landmarks: medial malleoli, ASIS, pubic tuberces, PSIS
- SI Landmarks: sacral sulcus depth, ILA posterior/inferior, backward bending test, lumbosacral spring
- Straight leg raise
- Thomas test

Memory Jog (just in case!)

- IS: anteriorly/posteriorly rotated innominate, superior/inferior shear, inflare/outflare
- SI: unilateral or bilateral sacral flexion/extension, forward/backward torsion

Objective Findings that may Indicate Psoas Syndrome

- Type II somatic dysfunction (SD) at L1-2
- Sacral SD on an oblique axis, generally to the side of lumbar side-bending
- Pelvis shift to the opposite side of the greater psoas spasm
- Piriformis spasm of the opposite side with a myofascial tender point (15)
Patient 1

- Neuromusculoskeletal exam intact
- Osteopathic Structural Exam:
  - L2 FRLSL
  - L/R sacral torsion
  - + Left iliacus C/S point

Patient 1

- A: 1) Psoas syndrome (567.31)
  - 2) SD: L (739.3), S (739.4), LE (739.6)
- P: 1) OMT: ME- Lumbar and sacral SD and C/S to piriformis point (98926)
  - 2) Therapeutic exercises (97110)
  - 3) (Possible referral to PT)

Somatic Dysfunction

- 2- Min Tx
- LE- psoas muscle: CS 739.6
- Lumbar SD: ME or HVLA 739.3
- 5- Min Tx
- Pelvis SD (IS SD): ME 739.5
- Sacral SD (SI SD): ME 739.4 (16)
Inhibition of Psoas

Psoas Strengthening

Psoas Stretching
“Somatics”

Core Strengthening

Osteopathic Point of View
- View the patient as a whole:
  - Structural
  - Circulatory/Respiratory
  - Neurologic
  - Metabolic
  - Biopsychosocial
• Remove somatic dysfunction (reduces afferent load, decreases segmental activity of the primary facilitated spinal cord segments)
• Discern what might have caused it
• Empower the patient with exercises and education

Patient 2
• 46 y/o female with a h/o chronic low back pain presents S/P slip and fall incident at her workplace resulting in 8/10 right buttock pain with "achiness" down the posterolateral aspect of RLE to just superior to R knee. Fall occurred 2 weeks ago. Pt slipped on water on floor and fell on sacrum. Sitting for >20 min exacerbates pain. It becomes intolerable and pt must stand and walk around.

Piriformis Syndrome
• A clinical situation whereby the piriformis muscle is compressing the sciatic nerve.
• Etiology thought to be an injury of the piriformis resulting in spasm, edema and contracture of the muscle which may lead to subsequent compression and entrapment of the sciatic nerve. (5)
Presentation

- Buttock pain with or without lower extremity pain, occasional numbness and paresthesias of the buttock without weakness
- May be aggravated by sitting on hard surfaces ("wallet neuritis") or activity of the lower extremities particularly involving hip adduction and internal rotation (overhead serve in tennis, golf swing, kicking motion as in soccer)
- May present with constipation and women may c/o dyspareunia. (2, 3)

Differential and Potential Secondary Causes

- Herniated disc
- L5-S1 radiculopathy
- Pelvic tumor or abscess
- Endometriosis
- Superior and inferior gluteal artery aneurysm
- Myositis ossificans
- Spinal stenosis
- Facet arthritis
- Lumbar facet syndrome
- Lateral recess impingement (2, 7)

Anatomy

- Arises from the pelvis surface of the sacrum, the upper margin of the sciatic notch and the pelvic surface of the sacrotuberous ligament
- Exits the pelvis via the greater sciatic foramen and inserts on the upper border of the greater trochanter by a rounded tendon (6)
- External rotator of the hip in standing and abductor in seated position (3)
Anatomy

It is thought that in the adducted internally rotated and flexed (AIF) position that the inferior border of the piriformis is tightened against the sciatic nerve trapping one or both divisions of the sciatic nerve.

Piriformis Syndrome

- May result in surrounding soft tissue injuries due to the rotation and/or flexion of the torso and hip
  - Lumbar facet joints
  - Iliopsoas muscle
  - Iliolumbar ligament
  - Muscles such as quadratus lumborum, gluteus medius and minimus, tensor fascia lata, erector spinae and hamstrings
- *these may mask sx or be masked themselves
Physical Exam

- Neurologic exam WNL- symmetric muscle strength and reflexes
- Tenderness to palpation from sacrum to greater trochanter
- May palpate a tender "sausage-shaped" band in both rectal or with pelvic exam just proximal to the ischial spine and superior to the coccygeal ligament
- Passive hip adduction and internal rotation may compress the sciatic nerve reproducing pain (+ Freiburg’s sign)
- Contraction of the piriformis with resistance to active hip external rotation and abduction may reproduce pain (+ Pace test)
- Pain with voluntary adduction, flexion, and internal rotation of the hip (Lasegue’s sign)

Osteopathic Structural Exam

- Lumbar segmental exam
- Standing (IS SD) and seated (SI SD) flexion tests
- IS Landmarks: medial malleoli, ASIS, pubic tubercles, PSIS
- SI Landmarks: sacral sulcus depth, ILA posterior/ inferior, backward bending test, lumbosacral spring
- Straight leg raise
- Thomas test
- Assess counterstrain points of piriformis and psoas

Findings on Physical Exam

- Ipsilateral side may appear shorter and external rotation of that LE may be present when the patient is supine. Internal rotation may be limited on that side. (16)
Osteopathic Viewpoint

• When doing a structural exam:
  • "Morton's foot" - prominent head of the 2\textsuperscript{nd} metatarsal which produces an unstable foot, internal rotation of the knee and internal rotation of the hip during the push-off phase of the gait. There may be a reactive contraction of the external rotators to oppose this motion. (16)

• Most imaging (CT, MRI) will be normal, a few studies have reported enlargement of the affected muscle
• However, one study (4) showed that patients with criteria fitting piriformis syndrome exhibited a delayed H-reflex at the piriformis compared to control groups. They subsequently were referred to PT where they received biweekly MFR applied to the lumbosacral paraspinal region and buttocks, McKenzie exercises and stretching of the external rotators of the thigh.

• Study stated that PT was successful in 11/12 patients referred.
• Felt that the electrophysiologic evidence of the H-reflex suggests that piriformis syndrome is "mechanical, functional impingement".
• "Therapy tends to free up the nerve at its sources. Increasing mobility, relaxing the muscle's tone, and increasing its resting length. It appears to reduce the effective impingement."
**Classic Treatment**

- Conservative: Correct abnormal biomechanics (heel lift, prescribed stretching or strengthening via a home program, referral to PT, NSAIDs)
- Precede stretch with U/S or Fluoromethane ®
- Steroid Injection (lateral to sacrum and medial to sciatic nerve)
- Surgical Intervention

**Patient 2**

- Neuromusculoskeletal exam intact
- Osteopathic Structural Exam:
  - L1-L4 NRRSL
  - L5 ERRSR
  - L/R sacral torsion
  - Piriformis C/S point on right

**Patient 2**

- A): 1) Piriformis syndrome (355.0)
  - 2) SD: L (739.3), S (739.4), LE (739.6)

- P): 1) OMT: ME to L and S SD. C/S piriformis point. (98926)
  - 2) Therapeutic exercises (97110)
References

References