Regional Pain Syndromes: Hip and Knee

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Disclosure Information

- Nothing to disclose
Learning Objectives

- Identify the common painful conditions in the hip and knee region
- Improve history taking skills and learn about the useful diagnostic tests that may improve the diagnostic yield
- Review current recommendations from professional societies for disease management
- Improve patient care by incorporating evidence based medicine

Hip Joint: Anatomy and Kinesiology

- The hip joint is the joint between the femur and acetabulum and is a major weight bearing joint
- It is a synovial joint and classified as ball and socket joint; offers greater motion in all directions
- It plays a great role in retaining balance
- The pelvic inclination angle is the single most element of human body posture
Hip Anatomy

Hip Joint Movements

- Lateral (external) rotation: 30 degrees extended, 50 when flexed
- Medial (internal) rotation: 40 degrees
- Extension: 20 degrees
- Flexion: 140 degrees
- Abduction: 50 degrees extended, 80 degrees when flexed
- Adduction: 30 degrees extended, 20 degrees flexed
Osteoarthritis of Hip

- Osteoarthritis (OA): a degenerative joint disease that can affect any joint in your body, including hips. Over time, due to aging, trauma, or other factors, the cartilage that cushions the joints starts to break down.
- The bone-on-bone action creates pain, stiffness, and can limit mobility.
- Earliest symptom is stiffness followed by pain leading to functional limitations.

OA Hip

- Diagnosis is primarily by history and physical findings.
- Physical findings include tenderness on palpation and Faber (Patrick’s) test.
- X-rays can confirm the diagnosis and establish the severity of the disease.
- No further diagnostic testing is required.
Faber (Patrick’s) Test

Nonpharmacologic Options: Hip Stretches

- Knee pull: lie on your back and pull your bent knee up toward your chest until you feel a stretch
- Sitting stretch: sit with the soles of your feet touching each other and your knees apart. Your legs will form a diamond shape. Slowly push your feet up toward your groin to stretch your hips
- Extended leg balance: this is the same exercise as the knee pull, but from a standing position
Osteonecrosis of Hip

- Osteonecrosis (avascular necrosis) of the hip is a painful condition that occurs when the blood supply to the bone is disrupted. Bone cells die without blood supply, osteonecrosis can ultimately lead to destruction of the hip joint.

- Risk factors include injury, alcoholism, chronic steroid use.

- Osteonecrosis is associated with other diseases, including Caisson disease (diver’s disease), sickle cell disease, myeloproliferative disorders, Gaucher’s disease, systemic lupus erythematosus, Crohn’s disease, arterial embolism, thrombosis, and vasculitis.

- Treatment usually symptomatic followed by hip replacement.
Trochanteric Bursitis

- Bursae are small jelly-like sacs that are located throughout the body. Common joints include shoulder, elbow, hip, knee, and heel. They contain a small amount of fluid and are positioned between bones and soft tissues, acting as cushions to help reduce friction.
- Trochanteric bursa covers the greater trochanter of the femur. Inflammation of this bursa is termed “trochanteric bursitis.”
- Commonly affects middle aged women and the pain is on the lateral aspect of thigh, fairly localized, and worse at night.
Trochanteric Bursitis Treatment

- Activity modification
- Exercises to increase strength and flexibility in hip joint
- Topical NSAIDs may offer some pain relief
- Steroid injections offer meaningful pain relief and can last few weeks to few months (40 mg Depo Medrol combined with local anesthetic)

Knee Joint

- Largest and strongest in the body
- Knee joint consists of an articulation between 4 bones: femur, tibia, fibula, patella
- 4 ligaments (2 cruciate and 2 collateral)
- Medial and lateral menisci
Knee Pain

- Common causes of knee pain include the following:
  - OA of the knee
  - Chondromalacia patella
  - Ligamentous injuries
  - Meniscal injuries
  - Patellar tendinitis
  - Patellofemoral syndrome
  - Iliotibial band syndrome

OA of Knee

- Pain, swelling, and stiffness are the primary symptoms of arthritis. Any joint in the body may be affected by the disease, but it is particularly common in the knee.
**Diagnosis of OA (Knee)**

- Primarily by history: pain, swelling, and morning stiffness, worse with ambulation
- Physical exam findings include swelling, warmth, and tenderness along with crepitus
- X-rays will confirm the diagnosis and findings include joint space narrowing and bone spurs
- MRI and CT are useful when the soft tissue involvement is suspected

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**Treatment of OA (Knee and Hip)**

- Lifestyle modification such as activity limitation and weight loss
- Assistive devices and orthotics (braces) to offload the weight
- PT to improve strength and flexibility
- Change from high impact to low impact activities
- Swimming is useful
- Modalities such as hot and cold
Treatment Options

Modalities such as heat and cold
- Cortisone injections (80 mg Depo plus 1-2 cc of local anesthetic), hyaluronic acid injections
- Cryodenervation (focused cold therapy) has limited evidence (infrapatellar branch of saphenous nerve)
- Stem cell therapy, prolotherapy, platelet rich plasma, and amniotic fluid all have limited evidence

Patellofemoral Syndrome and Chondromalacia Patellae
- Sometimes synonymously used
- There is consensus that PFPS does not have cartilage damage
- Vague pain around the kneecap is reported (circle sign)
- Worse with sitting (movie sign)
- Worse with descending stairs
- Patients report giving away
Patellofemoral Syndrome

Treatment of PFPS

- Responds well to conservative treatment
- Quadriceps strengthening is the gold standard
- Medications for pain control include APAP and NSAIDs
- Activity reduction may help with pain control
- Applying ice for 10-15 minutes will help reduce the inflammation
- Taping or bracing have no evidence
- Consensus is to avoid surgery unless all else failed
ACL Injuries

- One of the most common knee injuries is ACL sprain or tear
- About half of ACL injuries occur along with damage to other soft tissues.

Causes
- Gr 1 sprain: mildly damaged, slightly stretched can still keep the joint stable
- Gr 2 sprain: stretched to the point where it becomes loose (partial tear)
- Gr 3 sprain: ligament is split, joint is unstable (full tear)

Causes of ACL Injury

- The anterior cruciate ligament can be injured in several ways:
  - Changing direction rapidly
  - Stopping suddenly
  - Slowing down while running
  - Landing from a jump incorrectly
  - Direct contact or collision (eg, football tackle)
  - Female athletes have a higher incidence
ACL Injuries

- Injury may be associated with “popping noise”
- Pain with swelling that may subside on its own, unless patient returns to sports which may cause further damage and patient may feel unstable
- Examination should include palpation and signs of instability
- X-rays are not very useful, but MRI is very useful
Anterior Draw Test

Treatment of ACL Injuries

- Treatment will depend on the patient’s needs
- Young and athletic patients will need surgical repair
- Conservative treatment may be effective for older patients and the ones who have a very low activity level
- PT to improve strength and functional restoration along with bracing may help
Meniscal Injuries

- Menisci tear in different ways—tears are noted by how they look, as well as where the tear is.
- Sports related meniscal tears often occur along with other knee injuries, such as anterior cruciate ligament tears.
- Injuries in younger people happen often during sports, direct contact is sometimes involved.
- Injuries in older people more likely degenerative in nature.
- Often hear a pop with injury, most people can still walk. Gradual stiffness and swelling over 2-3 days.

Meniscal Injuries (cont’d)

- 2 wedge-shaped pieces of cartilage act as “shock absorbers” between femur and tibia; they are tough and rubbery to help cushion the joint and keep it stable.
Hx, Physical Exam, and Diagnostics

- Most common symptoms include pain, stiffness, locking, and sensation of “giving way” along with limited range of motion
- Physical exam includes ROM, palpation, and McMurray test
- X-rays will help exclude other diagnosis and MRI is useful for better visualization of soft tissues

Meniscal Injuries

- McMurray test

During a McMurray test, the examiner simultaneously extends and rotates the lower leg. When a “click” is felt or heard at approximately 40 degrees, the test is positive and a meniscal tear may exist.
Treatment of Meniscal Injuries

- Treatment depends on type, size, and location of the injury within meniscus
- Outer 1/3 has better vascular supply and may heal on its own
- Inner 2/3 has poor blood supply and may need to be surgically trimmed
- Age and activity will also play a role in treatment plan

Baker’s Cyst

- Baker’s cyst (popliteal cyst) is a benign swelling of the semimembranosus or more rarely some other synovial bursa found behind the knee joint, posterior to medial epicondyle of femur
- Rarely symptomatic unless they rupture and cause acute pain, often confused for DVT
- Usually requires no treatment
- Cold and hot therapy as well as symptomatic treatment for pain
References

- Osteoarthritis: National Institute of arthritis, musculoskeletal and skin diseases, April 2015
- Osteoarthritis: Care and management in adults (clinical guideline CG177), Feb 2014, commissioned by NICE