Differential Diagnosis III: Neuromusculoskeletal
DD 722

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What does evidence-based practice mean to you?

Will you be an evidence-based practitioner?

What is patient-centered care?
Patient centered care requires medical doctors and chiropractors to work side-by-side.

My Message

- Integration of evidence-based chiropractic services into the healthcare system enhances patient safety and quality of care.

• The Affordable Care Act permits chiropractors to function as members of the primary care team. The language in the bill ensures that doctors of chiropractic can be included on these patient-centered and holistic teams. The non-discrimination provision lifts some of the burden imposed by unfair limitations of certain insurance companies.
Pain Care in America Must Change

- Most people in pain, including those with chronic symptoms, go to primary care providers to get relief. But current systems of care do not adequately train or support internists, family physicians and pediatricians, the other health care providers who provide primary care in meeting the challenge of treating pain as a chronic illness. Primary care providers often receive little training in the assessment and treatment of complex chronic pain conditions.

Patient centered care requires medical doctors and chiropractors to work side-by-side.

Strain of Plantar Fascia

- Related to tight achilles tendon and gastrocnemius muscles
- Common in runners and dancers
- May lead to plantar fasciitis

Achilles Tendon

Strongest tendon in the body
Provides the power in the push off phase of the gait cycle

Strain of Plantar Fascia

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Achilles Rupture

- 1. Pop or snap
- 2. Feels like a gunshot or kick
- 3. Inability to ambulate

Osseous Pain

Generalized Pain Description

- **Joint pain** may be constant dull, deep ache but sharp upon motion
- **Muscle pain** may be a dull ache, crampy or spasm sensation
- **Trigger points** may be localized with pin point pain or diffuse with poor localization and paresthesias (formication)

Generalized Pain Description

- **Nerve pain** may be:
  - Constant
  - Burning and or hot
  - Sharp pain without movement
  - Stabbing or lightning-like
  - Tingling and/or numbness

Generalized Pain Description

- **Ligament pain** may be a burning, dull or a deep ache but it may be referred to scleratomes
- **Bone pain** may be a deep burning or dull sensation
- **Vascular pain** is usually a throbbing sensation

Myofascial Trigger Point
Myofascial Pain & Dysfunction
Referred Pain

• Specific referenced muscle referral zones
• Anterior tibialis trigger point refers to the dorsum of foot and large toe
Travell and Simons

Plantar Fasciitis Pain

Plantar and Achilles Examination

Soleus

Pain/Tenderness Grading Scale

• 0 = no pain
• 1 = pain with palpation
• 2 = pain and wincing with palpation
• 3 = pain, wincing and withdrawal from palpation
• 4 = will not permit palpation
Cipriano
Observation of Ruptured Achilles

Thompson’s Test
- Flex knee
- Squeeze calf
- Mechanical contraction of gastrocnemius and soleus will not plantar-flex the foot

Plantar Fasciitis Pain
Treatment and Prevention of Pedal Problems

- Stretching
- Rest and massage
- Sleeping posture
- Hydration
- Properly fitting shoes
- Shock absorption orthotics
By preventing over-pronation, orthotics release the tension on the Plantar Fascia.
Observation

Ankle sprain

Swelling, inflammation, and bruising of ankle

Damage to ligaments of the ankle

Grades of an ankle sprain

<table>
<thead>
<tr>
<th>Grade</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overstretch</td>
<td>Partial</td>
<td>Rupture</td>
<td></td>
</tr>
<tr>
<td>• Loss of functional ability</td>
<td>Minimal</td>
<td>Some</td>
<td>Great</td>
</tr>
<tr>
<td>• Pain and swelling</td>
<td>Minimal</td>
<td>Moderate</td>
<td>Severe</td>
</tr>
<tr>
<td>• Ecchymosis</td>
<td>Usually not</td>
<td>Common</td>
<td>Yes</td>
</tr>
<tr>
<td>• Difficulty weight bearing</td>
<td>None</td>
<td>Usual</td>
<td>Most always</td>
</tr>
</tbody>
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Ankle Sprain

Lateral ankle sprain is the most common ankle sprain

Ankle Examenation

Palpation and Range of Motion

Subtalar Examination

Passive Range of Motion
Anterior drawer test
To assess the integrity of the anterior talofibular ligament. If the ligament is torn, the talus will subluxate anteriorly compared with the unaffected ankle.

Posterior Drawer Test
Posterior drawer employs just the opposite forces to challenge the posterior talofibular ligament.

Inversion stress test or talar tilt
To assess the integrity of the calcaneofibular ligament and/or anterior talofibular ligaments.

Ottawa Ankle and Foot Rules
Should be used to determine necessity of radiographic examination of the traumatized ankle and foot.

Ottawa Rules Zones

• Ankle radiography is indicated only if a patient has pain in the malleolar zone and any of the following findings: bone tenderness at tip of medial or lateral malleolus or the inability to bear weight (four steps) immediately after injury and in the emergency department or physician’s office.
Ottawa Ankle and Foot Rules

- Foot radiography is indicated only if a patient has pain in the midfoot zone and any of the following findings: bone tenderness at base of 5th metatarsal or navicular or the inability to bear weight (four steps) immediately after injury and in the emergency department or physician’s office.

PRICE

- The immediate goals of treating acute ankle sprain are to decrease pain and swelling and protect ankle ligaments from further injury.
- The PRICE (Protection, Rest, Ice, Compression, Elevation) treatment protocol for acute ankle injury is commonly used. The protocol includes elevating the ankle and protecting it with a compressive device. Ice is applied to the injured ankle, and the patient is advised to rest for up to 72 hours to allow the ligaments to heal.

Talar Tilt Test

The assessment reveals a grade 3 lateral ankle sprain of the anterior talofibular and calcaneofibular ligaments.

Aircast Ankle Brace

A Cochrane review showed that lace-up or semirigid supports are more effective for ankle injury than tape or elastic bandages.

High Ankle or Syndesmotic Sprain Test

The crossing of the affected leg over the other leg will produce pain with a high ankle sprain of the interosseous membrane.
Pott’s Compression Test

- Tests for fracture of the tibia/fibula or syndesmotic sprain.

High Ankle Sprain

- Syndesmotic ligament sprain
- Squeeze test
- Stress radiographs
- Syndesmotic screw

Surgical Repair

- Syndesmotic screw corrects alignment and stabilizes without compressing the syndesmotic ligament.

Conditions of the foot and ankle
1. Achilles tendinitis
2. Shin splints
3. Lateral ankle sprain
4. Plantar fasciitis
5. Avulsion fracture
6. Stress fracture
7. Complete fracture
8. Blisters
9. Subungual hematoma
10. Ganglionic cyst
Evaluation of the Knee

- What type of injuries should we consider with our differential diagnosis of the knee?

Knee Injury
Strain, Sprain, Internal Derangement

- Please differentiate an internal derangement from an external knee injury.

Normal anatomy
Location of pain

Knee Pain
Osgood Schlatter’s Disease?
Jumper’s knee?
PFA?
Collateral ligament sprain?
Meniscal tear?

Patellofemoral Dysfunction
Patella Apprehension Test

- Pain and apprehension are present
- Positive test indicates lateral patellar dislocation

Patellofemoral Dysfunction
Dreyer’s Test

- Stabilize quadriceps tendon and patient able to raise leg indicates traumatic patellar fracture
Patellofemoral Dysfunction
Clarke’s Patellar Scrape Test

- Pain and crepitation may indicate patellofemoral arthralgia or chondromalacia patellae

Pes Anserinus

- From anterior to posterior, pes anserinus is made up of the tendons of the sartorius, gracilis, and semitendinosus muscles.
- Conjoined tendon lies superficial to the tibial insertion of the medial collateral ligament

Thessaly Test for Meniscal Tear

Positive findings
Repeat process at 20 degrees

- Pain medial or lateral
- Clicking or locking
- Most accurate at 20 degrees of knee flexion
Grading Strain & Sprain Injuries

- Grade 1: Microscopic tears
- Grade 2: Partial tears
- Grade 3: Complete tear with rupture

Causes of Popliteal Cyst

An accumulation of synovial fluid
Meniscal tears in children
DJD in adults

Remember...

- It is an honor and a privilege to treat another human being.

One Final Thought...

- Diagnosis is the key to successful treatment!

Ligament Injuries

Medial collateral and anterior cruciate ligaments are the most commonly injured.