Introduction

• Pain

  • A physiological consequence of impending or actual tissue injury
  • Serves as a vital protective mechanism
  • Can become a disease itself when it persists in the absence of tissue damage or following appropriate healing of injured tissues
Outline

• Low back pain
• Myofascial pain
• Fibromyalgia
• Shingles
• Psychology of pain
Low back pain

• The most common complaint in doctor’s offices worldwide
• Top 5 most common reason for doctor’s visit
• 60-90% of US adults will have LBP during their lifetime
  • 30% of these will become chronic
• Health care costs $50 billion/year
• #1 reason for work time loss
• #1 reason for disability
Low back pain

- **Risk factors**
  - Jobs with heavy lifting
  - Motor vehicle operators
  - Smokers
  - Anxiety/Depression
  - Stressful occupation
  - Women with multiple pregnancies
  - Scoliosis
  - Obesity
  - Genetics
Low back pain

- **Etiology**
  - 90% unknown cause
  - likely sprain, strain of ligaments, musculature or joints
- **Mechanical low back pain**
  - arthritis, spondylosis, lumbago
  - associated with pain with movement
  - usually pain does not radiate from low back
Low back pain

• **Etiology**

  • Sciatica, ‘pinched nerves’, radiculopathy, spinal stenosis

  • Disc bulging, facet joint enlargement, ligament overgrowth

  • Pain radiates from low back down lower extremities
Low back pain

• **Diagnosis**
  - Imaging usually is not warranted immediately unless patient has neurologic deficit, history of trauma, pain severe/unusual
  - May get plain xray initially
  - MRI
  - EMG may be warranted if symptoms unexplained by MRI findings
Low back pain

• **Treatment**

  • **Rest**

    • For acute pain only
    
    • No more than 2 days
    
    • Patients who were on bed rest for > 7 days had worse outcomes
    
    • May use brace intermittently or temporarily. Need to avoid prolonged use
Low back pain

• Treatment
  • Medications
    • **NSAIDs**: Ibuprofen, naproxen, toradol, meloxicam
    • **Opioids**: Hydrocodone, oxycodone
  • Most studies show no improvement in pain scores or function on chronic opioids
Low back pain

• Treatment

• Medications

• Neuropathic agents

• Gabapentin (Neurontin)

• Pregabalin (Lyrica)
Low back pain

• Treatment

• Medications

• Muscle relaxants

• Flexeril, Zanaflex, Robaxin, Valium
Low back pain

• **Treatment**

  • **Physical Therapy**

  • One of most important aspects of treatment

  • Strengthening and stretching exercises to support low back and decrease low back pain
Low back pain

• **Treatment**
  
  • **Physical therapy**
  
  • **Passive therapies**
    
    • Heat, massage, ultrasound, and electric stimulation
  
  • Less evidence to support long term pain improvement
Low back pain

- **Treatment**
  - Physical therapy
    - Recommend continuation of normal activity
  - Avoid deconditioning
  - “Hurt vs Harm”
Low back pain

• **Treatment**
  
  • **Epidural steroid injection**
    
    • Indicated for low back pain with radiation from nerve root irritation
    
    • May help with localized LBP from annular tear (disc)
Low back pain

• Treatment
  • Epidural steroid injection

• Procedure:
  • lying on abdomen
  • X-ray guidance used
  • Numbing agent injected
  • Small needle directed to epidural space
  • Contrast injected
  • Steroid injected
Low back pain

• **Treatment**
  
  - **Epidural steroid injection**
    - Steroid works locally by decreasing inflammation in nerve
    - Avoid systemic side effects of steroids
    - May receive up to 4 injections per year
Low back pain

- **Treatment**

  - **Facet injections**
    - Indicated for arthritis of facet joints, ‘mechanical low back pain’
    - May inject steroid directly into joint or use radio frequency current to ablate nerves that go to facet joints
Low back pain

• Treatment

• Facet injections

• Procedure:
  • Lying on abdomen
  • Numbing agent injected
  • Direct 4-6 small needles to nerves that go to facet joints
  • Inject contrast
  • Inject steroid/local
Low back pain

- Treatment

- Surgery

- Usually exhaust conservative measures first

- May be indicated immediately if neurologic deficits present or pain excruciating
Low back pain

- Treatment
  - Spinal Cord Stimulation
    - Indicated for radiating pain to lower extremities
    - Applied electrical stimulation causes stimulation of nerves and prevents pain transmission to brain
    - Procedure is trialled first before implantation
Sacroiliac Joint Dysfunction

- SI joint: Fixed joint, meant to transfer weight from trunk to lower extremities

- Causes of dysfunction: idiopathic, trauma, twisting injury, pregnancy (increased progesterone causing laxity in joint)
Sacroiliac Joint Dysfunction

- Treatment
  - NSAIDs
  - Physical therapy
  - Bracing
Sacroiliac Joint Dysfunction

• **Treatment**
  
  • **SI joint injection**
    
    • Local anesthetic + steroid injected into SI joint
    
    • Only way to truly diagnose SI joint dysfunction
Myofascial Pain Syndrome

• Muscle spasm

• Generally a protective mechanism to other pain source (trauma, other acute pain condition)

• When chronic, may be due to malfunction of acetylcholine receptors causing sustained contraction
Myofascial Pain Syndrome

- **Location**: can occur in any muscle, but most commonly in neck and back

- **Treatment**
  - Stretching to restore normal muscle length and activity
Myofascial Pain Syndrome

• Treatment
  • Trigger point injections
    • Decreases inflammation
    • Allows for stretching/PT
    • Usually done with local anesthetic +/- steroid
    • May use botox, saline, water, or dry needling
Fibromyalgia

- Musculoskeletal pain disorder characterized by diffuse pain and abnormal soft tissue tenderness

- **Symptoms:**
  - Widespread muscle pain
  - Decreased pain threshold
  - Fatigue
  - Sleep disturbance
  - Morning stiffness
  - Depression/Anxiety
  - IBS
  - Headache
Fibromyalgia

- **Etiology**: Unknown!
  - Theories include autoimmune, psychological, or muscle pathology
- **Prevalence**: 0.5-5% of population
  - 10:1 Female:Male
- Most common in 20-50 year olds
Fibromyalgia

- **Treatment**
- Education
- Validation of disease
- Exercise
- Coping skills, psychological therapy
- Setting goals: Improve function and quality of life. Palliate pain, not abolish pain
Fibromyalgia

- Treatment
  - NSAIDs
  - Antidepressants (SNRIs or TCA)
  - Muscle relaxants
  - Sleep aids for insomnia
• **Herpes Zoster:** A reactivation of a virus following primary chicken pox infection

• Virus spreads from dorsal root of spine to corresponding dermatome
Shingles

- Occurs in 500,000 people/year in US
- 20-30% of population will experience during lifetime
- Up to 50% of population will experience if they live to age 85
- More susceptible with increasing age and immunosuppression
Shingles

• Affected can be contagious to someone who has never had chicken pox or vaccine

• Unlikely to cause reinfection or shingles in people already exposed/vaccinated
Shingles

- **Symptoms:**
  - Usually develop viral illness symptoms 7 days prior to lesions
  - Lesions then develop in affected dermatome with blisters that eventually scab
  - Symptoms resolve after 2-4 weeks, can develop into post-herpetic neuralgia
  - Pain associated usually described as sharp, stabbing and burning pain
  - Can occur anywhere, but usually in thoracic back (mid-back)
Shingles

**Treatment:**

- *Antiviral therapy (acyclovir), decreases risk of developing PHN*

- Symptom treatment: Steroids, antidepressants, epidural steroids, opioid analgesics
Shingles

• **Prevention:**
  - CDC recommends all patients over age of 60 receive vaccination unless contraindicated by immunosuppression (HIV, chemotherapy, etc)
  - Appears to be more common in patients exposed to chicken pox virus compared to vaccinated patients, so could see a decrease as vaccinated population ages
Post Herpetic Neuralgia

- Pain that persists past normal healing course of shingles (30-120 days)

- Thought to be caused by nerve damage during acute phase of shingles

- Incidence between 9-34%

- Pain characterized more burning than sharp/stabbing

- Can develop allodynia - pain from a non-painful stimulus (clothes touching skin)
Post Herpetic Neuralgia

- **Risk factors:**
  - Increasing age
  - Patients with more severe pain during shingles
  - No antiviral therapy during shingles
Post Herpetic Neuralgia

- Treatment
  - Antidepressants (TCAs)
  - Neuropathic medications (gabapentin, Lyrica)
  - Lidocaine patch
  - Capsaicin patch
  - Opioid analgesics
  - Nerve blocks
  - Spinal cord stimulation
Psychology of Pain

- Psychological and social factors have long been recognized as influencing the experience of pain.
- Studies have shown treatment of depression/anxiety can affect pain perception.
Psychology of Pain

- **Psychopharmacology**
  - Low Serotonin and Norepinephrine associated with anxiety/depression
  - Serotonin and Norepinephrine associated with inhibiting pain signals to brain
  - SNRI and TCA work to increase levels of both neurotransmitters
Psychology of Pain

• **Goals of psychological treatment:**
  
  • Reducing pain and pain related disability
  
  • Treating comorbid mood disturbances
  
  • Increasing perceptions of control and self-efficacy
  
  • Reducing pain related disability
  
  • Addressing pain related psychosocial factors (impact of pain on family and marriage)
Psychology of Pain

• **Behavioral interventions**
  
  • Operant interventions focus on the behavior of the patient
  
  • Goal is to decrease learned pain behaviors (e.g. grimacing/limping result in positive reinforcement by loved ones offering compassion)
  
  • Decreased physical activity is also reinforced as patients learn to avoid painful activities
  
  • Pacing and activity modulation
Psychology of Pain

• Behavioral interventions
  
  • Relaxation techniques to decrease stress
  
  • Biofeedback provides physiological feedback to patient so they may learn to modulate normal involuntary responses (e.g. muscle tension)
Psychology of Pain

• **Behavioral interventions**
  
  • Coping skills
  
  • Cognitive restructuring
    
    • Focuses on changing attitudes, thoughts, & beliefs in response to pain
    
    • Challenge negative self talk (e.g. “I can’t stand this pain anymore!”)
    
    • Replace with statements that reduce negative affect, emphasize control and encourage adaptive coping (e.g. “This is a challenge that I’ve faced before and I can handle it this time”)
References
