Fibromyalgia: Current Trends and Concepts

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American College of Rheumatology (ACR) Criteria for FM

- ACR criteria
  - History of chronic widespread pain $\geq 3$ months
  - Patients must exhibit $\geq 11$ of 18 tender points
- Widespread pain was found in 97% of patients with FM, compared with 70% in controls
- FM can be identified from among other rheumatologic conditions with use of ACR criteria
  - Criteria need further refinement as knowledge about FM evolves

ACR criteria are both sensitive (88.4%) and specific (81.1%)

Epidemiology

- Affects 2-6% of women
- Age 20-60
- 7.5:1 female to male
Clinical Features

• widespread pain bilaterally
• pain on palpation in common tender points
• sleep disturbance
  – alpha-delta sleep (non-REM)
• associated factors
  – fatigue, irritable bowel, anxiety, headaches
  – urinary frequency, depression
Clinical Features of Fibromyalgia

**TENDERNESS**
- Presence of tender points
- Most patients also have tenderness to pressure, heat, cold, electrical pain

**WIDESPREAD PAIN**
- Chronic, widespread pain is the defining feature of FM
- Patient descriptors of pain include: aching, exhausting, nagging, and hurting

**SLEEP DISTURBANCES**
- Characterized by nonrestorative sleep and increased awakenings
- Abnormalities in the continuity of sleep and sleep architecture
- Reduced slow-wave sleep
- Abnormal alpha wave intrusion in non-REM sleep

**FATIGUE/STIFFNESS**
- Morning stiffness and fatigue are common characteristics of FM

Pathophysiology

• Sleep
  – altered slow wave sleep (non-REM) lowers serotonin levels with inverse increase in substance P

• Neurohormonal
  – hypothalamic-pituitary-adrenal axis
    • increased cortisol
    • decreased IGF-1 level due to decrease GH
  – hypothalamic-pituitary-thyroid axis
    • decreased TSH
  – lower estrogen levels
    • limited studies
Pathogenesis

Genetic or Psychological Predisposition

Triggers, trauma, emotional stress, infection

Disordered Stage 4 sleep

CNS serotonin

endorphin effect
release of substance P

Altered sympathetic system

Muscular perfusion

Pain thresholds

Altered HPA axis

Fibromyalgia

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Fibromyalgia
Pathophysiology of Fibromyalgia: The Role of Central Sensitization

1. First, impulses from afferents depolarize dorsal horn neurons.

2. Then, extracellular Ca$^{2+}$ and nitric oxide diffuse into neurons and cause exaggerated release of substance P and glutamate; this results in neuronal hyperexcitability.

3. Finally, a pain signal is sent to the brain from the dorsal horn.

Despite extensive research, the pathogenesis of pain in FM is not clearly understood. However, central sensitization has emerged as a leading theory of disease mechanism.

Treatment

- Goals
  - patient education and reassurance
- establish a diagnosis
  - RA
  - thyroid
  - collagen vascular
- Avoid bed rest
- Treat spasm and pain
- Evaluate
- Prevent long-term complications
Physical Medicine

- physical therapy
  - modalities
  - spray and stretch
  - teach HEP
- massage
  - self-limiting
  - theracane
- manual medicine
  - stretching
  - mobilization
  - joint manipulation
- exercise
  - low impact aerobic
  - expect increase soreness
  - 30 to 40 minutes 3-5 times per week
  - Tai Chi
Medical Management

- Tricyclic antidepressants
  - Amitriptyline, nortryptiline
- Serotonin re-uptake inhibitors
  - Effexor, cymbalta, pristiq
- Muscle relaxants
  - cyclobenzaprine
- NSAID’s
  - ibuprofen
- Growth hormone
  - 0.0125 mg/kg
- Gabanergic medications
  - Lyrica
Pregabalin Binds to the $\alpha_2$-$\delta$ Subunit of Voltage-Gated $Ca^{2+}$ Channels in the Central Nervous System

Pregabalin selectively binds to $\alpha_2$-$\delta$ subunit of voltage-gated calcium channels
- Modulates calcium influx in hyperexcited neurons
- Reduces neurotransmitter release (glutamate, substance P, norepinephrine)
- Pharmacologic effect requires binding at this site in animal models
- The clinical significance of these observations in humans is currently unknown

Psychological Management

- cognitive behavioral
- behavioral modification
- Coping skills
Pain Management

- Narcotics - no
  - Only rare cases
- NSAID’s
- Muscle relaxants
- Growth hormone
- Gabanergic modulators
- Behavioral

- Injections
  - xylocaine
  - Sarapin
  - Normal Saline
  - Dry needling
  - Botox
Complimentary Management

- Chiropractic
- Acupuncture
  - poorly controlled studies
  - De-Qi, needle manipulation, E-stim
- Nutritional
  - St. John’s Wort
  - Melatonin
  - B supplements
  - Magnesium
  - Malic acid
  - ENADA

- Herbal
  - Ma Huang(ephedra)
  - Fu Zi (aconite)
    - high incidence of poisoning
  - Valerian root
  - Ginkgo Baloba
  - Glucosamine sulfate

- Magnetic
  - poorly studied
  - parameters:
    - strength, wave, frequency
  - still in its infancy
Summary

- Fibromyalgia is a syndrome rather than a disease
- To date studies have not revealed any abnormalities on a muscular level
- Recommendations for relief consist of a well balanced diet, exercise, removal of stressors, nutritional supplementation, and pain modulation
- be an educated consumer