

# Fibromyalgia

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# Objectives

- Background
- Clinical manifestations and diagnosis
- Pathogenesis
- Differential diagnosis
- Treatment

# Background

- Common cause of chronic generalized musculoskeletal pain
- Occurs most frequently in females between 20 and 55 years old
- 6 times more common in women than men
- No obvious abnormalities on physical exam
- Lab tests often unremarkable
- Imaging studies often unremarkable
- Coexists with many disorders

# Clinical Manifestations

- Diffuse musculoskeletal pain
- Common sites include the neck, back, chest wall, arms, and legs
- Pain is chronic and persistent, but can vary in severity
- Burning, tingling, or numbness
- Joints usually are not swollen, red, or warm on exam
- Aggravating factors: increased activity, stress, poor sleep, changes in weather

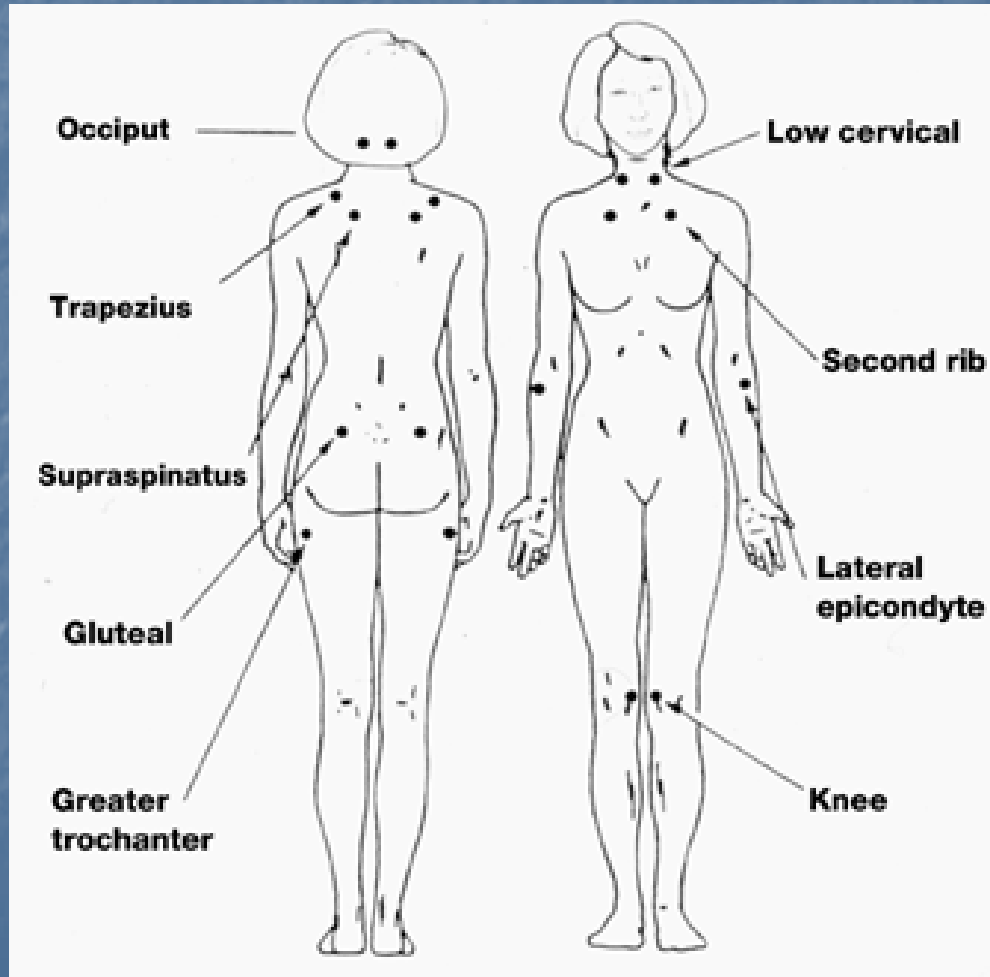
# Clinical Manifestations

- Fatigue
- Sleep disturbances
- Mood alterations
- Headaches
- Weight gain/loss
- Raynaud phenomena
- Dry mouth
- Dry eyes

# Diagnosis

- Tender points
- Typically bilateral
- ACR criteria: diffuse musculoskeletal pain; significant tenderness in at least 11 out of 18 tender points
- Used most often for clinical trials and for diagnostic classification

# Tender Points



# Diagnosis

- Labs: CBC, ESR, thyroid function tests, CPK
- Be selective regarding lab tests that are ordered
- Imaging studies should also be kept to a minimum

# Pathogenesis

- Abnormal pain regulation – central sensitization
- Lower threshold for pain
- Possible genetic predisposition: genes involved in serotonin or catecholamine signaling pathways
- First-degree relatives of fibromyalgia patients have a higher-than-expected frequency of fibromyalgia

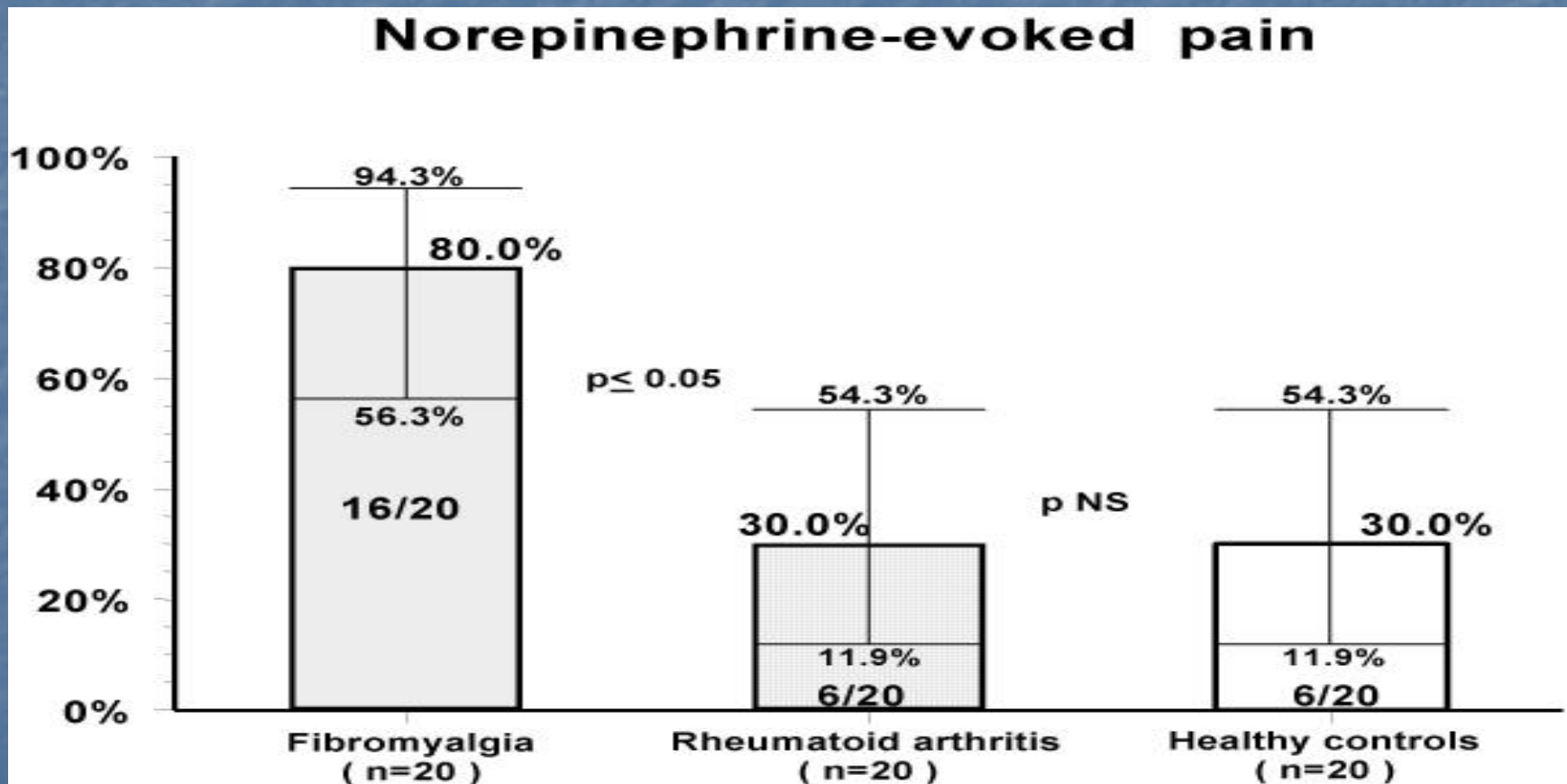
# Norepinephrine-evoked pain

- Prospective double-blind placebo-controlled study
- 20 patients with fibromyalgia, 2 control groups (20 rheumatoid arthritis patients, 20 healthy controls)
- Norepinephrine injections, saline injections
- Evaluation of local pain after injections

# Norepinephrine-evoked pain: baseline characteristics

	Fibromyalgia (n=20)	Rheumatoid arthritis (n=20)	Healthy controls (n=20)
Age (mean +/- SD)	43.0 +/- 15.2	45.4 +/- 13.1	42.1 +/- 14.8
Gender (F/M)	(18/2)	(18/2)	(18/2)
Tender points (mean +/- SD)	16.8 +/- 1.9	1.3 +/- 1.7	0.7 +/- 1.5
VAS pain score (mean +/- SD)	6.5 +/- 2.5	4.3 +/- 2.5	0 +/- 0

# Norepinephrine-evoked pain



# Norepinephrine-evoked pain

- Fibromyalgia patients experience increased frequency and greater intensity of norepinephrine-evoked pain
- Fibromyalgia may be a sympathetically maintained pain syndrome

# Differential Diagnosis

- Myositis/myopathies
- Medications (e.g. lipid-lowering agents, antiviral drugs)
- Depression
- Obstructive sleep apnea
- Chronic fatigue syndrome
- Parvovirus infection
- Systemic lupus erythematosus
- Rheumatoid arthritis

# Differential Diagnosis

- Polymyalgia rheumatica
- Hypothyroidism
- Lyme disease
- Peripheral neuropathy
- Myasthenia gravis
- Multiple sclerosis
- Tapering of high-dose corticosteroids

# Treatment

- General principles
- Education
- Medications
- Exercise
- Complementary therapies

# Treatment – General Principles

- Difficult to treat
- Multidisciplinary programs are best
- Education is the most important first step
- Self management
- Reassurance

# Multidisciplinary Team

- Rheumatologists
- Psychiatrists
- Physical therapists
- Pain management specialists
- Mental health professionals

# Self management using exercise and education

- 164 patients with fibromyalgia
- Randomized to immediate 6 week program versus waiting list control group
- 6 month follow up
- Main outcomes: changes in quality of life, functional consequences of fibromyalgia, patient satisfaction, pain
- Improvements in all outcomes in treatment group, except pain (no change in pain between the two groups)

# Self management using exercise and education

- Swimming pool exercises
- Relaxation exercises
- Low impact land-based exercises
- Sessions on activities of daily living
- Education discussion sessions

# Self management using exercise and education

- Quality of life and functional consequences of fibromyalgia: fatigue, depression, anxiety, vitality (all with  $p < 0.05$ )
- Improvements are maintained for at least 6 months after program completion
- Development of better coping skills

# Medications

- Anti-inflammatory medications not effective (e.g. NSAIDs, prednisone)
- Other analgesics
- Tricyclic antidepressants
- Muscle relaxants (cyclobenzaprine)
- Serotonin reuptake inhibitors
- Norepinephrine and serotonin reuptake inhibitors
- Anticonvulsants

# Tramadol and Acetaminophen

- Effective in reducing pain in fibromyalgia
- Blinded, randomized, placebo-controlled trial of 315 patients
- Tramadol 75 mg plus acetaminophen 650mg four times daily versus placebo
- 35% of treatment group had a 50% or more decrease in pain, versus 18% of placebo group

# Tricyclic antidepressants

- Often used as first-line treatment
- Inconsistent results among patients
- Side effects are common
- Amitriptyline (dry mouth, constipation, fluid retention, weight gain, concentration difficulties, cardiotoxicity)
- Desipramine – less well-studied, fewer anticholinergic side effects
- “Start low, go slow”

- Serotonin reuptake inhibitors:
  - Fluoxetine (Prozac)
  - Paroxetine (Paxil)
- Norepinephrine and serotonin reuptake inhibitors:
  - Duloxetine (Cymbalta)
  - Venlafaxine (Effexor)

# Anticonvulsants

- Gabapentin: common side effects include dizziness, lightheadedness, sedation, weight gain
- Pregabalin: improves pain, but can also improve fatigue and sleep disturbances

# Prescribed Exercise

- Aerobic/cardiovascular fitness exercise
- Randomized controlled trial
- 136 patients, 12 weeks of exercise
- Aerobic exercise (active treatment group) versus relaxation and flexibility (control treatment group)
- 3 month follow up, then again at 6 and 12 months
- Outcomes: self-assessment of improvement, tender point count, pain
- Outcomes better for active treatment group except for pain score, which did decrease, but with no significant difference between groups

# Prescribed Exercise

220 offered screening

196 screened

- Not fibromyalgia (n=29)
- Too mild (n=9)
- Fibromyalgia but ineligible (n=22)

Randomised (n=136)

Exercise group (n=69)

Relaxation group (n=67)

## Adherence

No of classes attended:

0	11
1-8	16
9-16	23
17-24	19

## Adherence

No of classes attended:

0	10
1-8	26
9-16	19
17-24	12

# Exercise

- Start slow, gradually increase
- Walking, biking, swimming, water aerobics
- Strength training
- Flexibility exercises

# Complementary therapies

- Heat therapy
- Massage
- Tender point injections
- Cognitive-behavioral therapy (CBT)  
teaches skills that help patients cope with  
their illness

# Take-home Points

- Chronic diffuse musculoskeletal pain
- Can cause significant morbidity
- Pathogenesis involves abnormal pain regulation, but much still needs to be elucidated
- ACR criteria
- May simulate and coexist with many other conditions
- Multidisciplinary treatment works best

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