

Rheumatology Refresher for NPs

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Key Teaching Points

- Mechanical vs. Inflammatory Disease
 - Mechanical (OA)
 - Inflammatory (RA)
- Number of joints involved
 - Mono, oligo or poly
- Specific vs nonspecific complaints
 - Arthralgia vs arthritis, myalgia vs myositis
- Is there evidence for autoimmune disease
 - Rheumatoid arthritis, lupus
- Targeted diagnostic testing
 - Don't get an ANA or ESR on all patients

NONE OF THE RHEUM TESTS ARE DIAGNOSTIC

Arthritis

- What are Rheumatic Diseases and What is Arthritis?
- Initial Characterization of Arthritis
- Osteoarthritis (OA)
- Rheumatoid Arthritis (RA)
- Lupus (SLE – Systemic Lupus Erythematosus)
- Fibromyalgia
- Gout
- Bursitis
- Infectious Arthritis
- General Musculoskeletal Exam

Note: This slide contains a diagram of the human skeleton showing the different types of joints: ball and socket, pivot, hinge, and ellipsoidal.

Table 1-1. Noninflammatory vs Inflammatory Disorders

	Non-inflammatory disorders (e.g., OA)	Inflammatory disorders (e.g., RA, lupus)
Symptoms		
Morning stiffness	Focal, brief	Significant, prolonged, >1hr
Constitutional symptoms	Absent	Present
Peak period of discomfort	After prolonged use	After prolonged inactivity
Locking or instability	Implies loose body, internal Derangement, or weakness	Uncommon
Symmetry (bilateral)	Occasional	Common
Signs		
Tenderness	Unusual	Over entire exposed joint area
Inflammation (fluid, Tenderness, warmth, Erythma, synovitis)	Unusual	Common
Multisystem disease	No	Often
Lab abnormalities	No	Often

Adapted from American College of Rheumatology ad hoc Committee on Clinical Guidelines. Guidelines for the initial evaluation of the adult patient with acute musculoskeletal symptoms. *Arthritis Rheum* 1996;39:1.

Case 1

- 72 year old woman
 - Progressive pain in the hands, wrist, hip, knees
 - Pain worsens with use
 - Unable to walk stairs
- Exam
 - Nothing warm or tender
 - Small effusion in the right knee
- Laboratory
 - Normal ESR, CRP, negative RF
 - Synovial fluid – few WBCs
- Radiographs – joint space narrowing, subchondral sclerosis, osteophytes

Note: This slide shows a photo of hands suffering from rheumatoid arthritis, with a red arrow showing Bouchard's nodes at the middle knuckle, and a red arrow showing Heberden's nodes at the top knuckle.

Note: This slide shows an x-ray of a hand showing symptoms of rheumatoid arthritis: joint space narrowing, subchondral sclerosis, and osteophytes.

Osteoarthritis – Distribution

Note: This slide shows a diagram of the joints in the human body, including the Bouchard's nodes and Heberden's nodes of the fingers.

Osteoarthritis (OA)

- Joint cartilage wears away
- Bone spurs grow out from the edge of the bone
- Synovial fluid increases

Note: This slide shows a diagram comparing the cartilage of a health knee and the cartilage of a knee suffering from osteoarthritis.

Osteoarthritis

Most Common Type of Arthritis

- Risk factors include:
 - **Age (>50)**, obesity, trauma, genetics, sex hormones, and muscle weakness
- Characterized by:
 - Degenerative Joint Pain worse with use
 - Morning Stiffness <30min, joint instability/buckling, crepitus with motion
 - Fraying of cartilage between joints
 - Pain, swelling, disability and loss of motion at the joint
 - Growth of bone spurs on the joint edges, pieces may break off and float inside the joint space

Osteoarthritis

- Objective Findings
 - ESR and CRP are normal
 - Synovial fluid is noninflammatory
 - Osteophytes & Joint Space narrowing on X-ray
- Therapy
 - Weight loss and exercise
 - Acetaminophen, NSAIDs, mild analgesics
 - Joint Replacement
- Rheum can offer
 - Reinforce your intervention
 - Steroid injections
 - Discuss joint replacement

Case 2

- 34 year old woman
 - Hand, wrist, elbow, knee and feet pain for 2 months
 - Fatigue, low grade fevers
 - Morning stiffness until noon
 - Needs help dressing herself
- Exam confirms
 - Tenderness and swelling in the affected joints
- Laboratory
 - Elevated CRP, ESR, RF
- Radiographs – erosions are seen

Note: This slide shows a photo of a woman's hands having swollen finger joints.

Note: This slide shows an x-ray of hands showing the following characteristics:

- Joint space narrowing
- Erosions
- Deformity

Rheumatoid Arthritis – Distribution

Note: This slide has a diagram of the joints of the human body, indicating which individual joints are involved in rheumatoid arthritis.

Rheumatoid Arthritis

Note: This slide shows a photograph of hands suffering from late stage rheumatoid arthritis, plus a diagram showing specific characteristics: boutonniere deformity of thumb, ulnar deviation of metacarpophalangeal joints, and swan-neck deformity of fingers.

http://www.csmc.edu/pf_5234.html

<http://health.allrefer.com/health/rheumatoid-arthritis-rheumatoid-arthritis-2.html>

Rheumatoid Arthritis

Prevalence is 1-2% of the population

- Risks Factors
 - Predominantly affects females (3:1)
 - Genetic prevalence (MHCII, HLA DRB)
 - Smoking
- Characteristics - Progressive, additive, symmetric
 - Insidious onset
 - Symmetric joint swelling with stiffness, warmth, tenderness, and pain
 - Typical age of onset is 20-40 years
 - Typically effects the PIP, MCP, MTP, wrists, knees, and ankles
 - Morning Stiffness Lasting > 1 hour
 - Pain Worse after Inactivity
 - Difficulty with ADL's in the morning
 - Systemic symptoms of malaise, fever, weight loss, and morning stiffness
 - Deformities common
 - Ulnar Deviation, Swan Necking, Boutonniere

American College of Rheumatology Criteria

• 1987 Criteria for the Classification of Acute Arthritis of Rheumatoid Arthritis Criterion Definition

1. Morning stiffness

Morning stiffness in and around the joints, lasting at least 1 hour before maximal improvement

2. Arthritis of 3 or more joint areas

At least 3 joint areas simultaneously have had soft tissue swelling or fluid (not bony overgrowth alone) observed by a physician. The 14 possible areas are right or left PIP, MCP, wrist, elbow, knee, ankle, and MTP joints

3. Arthritis of hand joints

At least 1 area swollen (as defined above) in a wrist, MCP, or PIP joint

4. Symmetric arthritis

Simultaneous involvement of the same joint areas (as defined in 2) on both sides of the body (bilateral involvement of PIPs, MCPs, or MTPs is acceptable without absolute symmetry)

5. Rheumatoid nodules

Subcutaneous nodules, over bony prominences, or extensor surfaces, or in juxtaarticular regions, observed by a physician

6. Serum rheumatoid factor

Demonstration of abnormal amounts of serum rheumatoid factor by any method for which the result has been positive in <5% of normal control subjects

7. Radiographic changes

Radiographic changes typical of rheumatoid arthritis on posteroanterior hand and wrist radiographs, which must include erosions or unequivocal bony decalcification localized in or most marked adjacent to the involved joints (osteoarthritis changes alone do not qualify)

Rheumatoid Arthritis

Objective Findings

- Elevated CRP and ESR
- RF (80%), CCP (60%)
- Swelling, erosions, osteopenia on X-Ray

Therapy

- DMARDS (disease modifying antirheumatic drugs) to Prevent long-term damage
 - MTX, Hydroxychloroquine (Plaquenil), Sulfasalazine
- Analgesics & Steroids for pain control
 - NSAIDs, Prednisone, Tylenol
- Biologics: Newer therapy that further prevents damage
 - Etanercept (Enbrel), Adalimumab (Humira)
- Immunosuppressants: to restrain overactive immune system
 - Azathioprine (Imuran), Leflunomide (Arava)
- PT, OT

Monitoring for MTX Toxicity

- Potential toxicities include:
 - Hematologic (Bone marrow suppression)
 - Pulmonary (Acute or Chronic)
 - Liver
 - Stomatitis → Folic Acid
 - GI
- Guidelines:
 - Every two months obtain
 - CBC
 - LFT's

Case 3: History

- A 48-year-old woman presents with diffuse muscle pain, weakness, and significant fatigue. She reports
 - Symptoms for over 3 years that have become slightly worse in past 6 months
 - Generalized pain and fatigue that limit her ability to work
 - Increasing sleep difficulty due to the pain

Case 3: Objective Findings

- General physical examination is unremarkable
- Diffuse muscle tenderness is noted
- Some tenderness around the joints, but no synovitis
- No objective muscle weakness
- Normal neurologic examination
- CBC, ESR, and chemistry profile are normal, ANA negative

How Should You Approach This Patient With Diffuse Musculoskeletal Complaints?

- Ask yourself the following questions:
 - Is this a systemic inflammatory disease?
 - Is this a soft-tissue pain syndrome?

NOTE: Do not overlook regional rheumatic pain syndromes (physical examination is critical).
Examples: bursitis, tendinitis, RSD (CRPS)

Inflammatory Causes of Musculoskeletal Pain: Specific Diagnoses

- Rheumatoid arthritis
- Systemic lupus erythematosus
- Polymyositis
- Scleroderma/eosinophilic fasciitis
- Polymyalgia rheumatica
- Duration of symptoms is important for diagnosis
 - <6 months = may be early rheumatic disease
 - 1 year = diagnostic clinical signs and lab abnormalities usually present
 - >2 years = abnormalities almost always present

Fibromyalgia: Soft-Tissue Pain Syndromes

- Chronic musculoskeletal pain syndrome of unknown etiology
- History of Traumatic Event
- Prevalence is 2-5% with a female to male predominance of 8:1
- Mean age is 30-60
- Systemic Complaints:
 - diffuse pain, tender points, fatigue, depression and sleep disturbances
- Testing:
 - Rule out: Thyroid abnormalities, Medication causes (Statins), Hepatitis, other autoimmune diseases
- Therapy:
 - Psychotherapy, NSAIDS, Sleep Aides
- Nursing Interventions:
 - Sleep Hygiene
 - Emotional Support
 - Educational resources for Exercise Programs
 - Stress Management

Soft-Tissue Pain Syndromes: Fibromyalgia

- Widespread musculoskeletal pain
 - Decreased pain threshold and tolerance
- May have diffuse or localized tenderness
- Associated fatigue, sleep, somatic complaints
- No inflammation seen on examination
- Normal laboratory findings
- DON'T FORGET
 - Hypothyroid and Statin use cause myalgias

Case 4

- 23 year old woman
 - Pain and swelling in the hands, elbows, knees
 - Rash, fever, hair loss
- Exam
 - Tender swollen MCPs, wrists, elbows and knees
 - Patchy alopecia
 - Photosensitive rash
- Laboratory
 - Elevated ESR, normal CRP, leukopenia, anemic, proteinuria, ANA positive, RF positive
- Radiographs – normal

Lupus

- 90% female, typically young
- Systemic complaints
 - Fever, arthritis, serositis, weight loss, fatigue
 - Hematologic, serologic, urinalysis
- Watch – fatigue, weight, BP and urine
- Testing
 - ANA, anti-DNA, C3, CBC, CMP, UA
 - Other: ENA, Anti-phospholipid Ab, Ig levels
- Therapy
 - Prednisone, NSAIDS, Plaquenil, MTX, Sunscreen
- REFERRAL TO RHEUMATOLOGY

Table 3 – 1997 update of the 1982 American College of Rheumatology classification criteria for systemic lupus erythematosus

Item	Definition
Malar Rash	Fixed erythema, flat or raised, over the malar eminences, tending to spare the nasolabial folds
Discoid rash	Erythematous raised patches with adherent keratotic scaling and follicular plugging; atrophic scarring may occur in older lesions
Photosensitivity	Skin rash as a result of unusual reaction to sunlight, by patient history or physician observation
Oral ulcers	Oral or nasopharyngeal ulceration, usually painless, observed by physician
Nonerosive Arthritis	Involving 2 or more peripheral joints, characterized by tenderness, swelling, or effusion
Pleuritis or Pericarditis	a) Pleuritis--convincing history of pleuritic pain or rubbing heard by a physician or evidence of pleural effusion OR b) Pericarditis--documented by electrocardiogram or rub or evidence of pericardial effusion
Renal Disorder	a) Persistent proteinuria > 0.5 grams per day or > than 3+ if quantitation not performed OR b) Cellular casts--may be red cell, hemoglobin, granular, tubular, or mixed
Neurologic Disorder	a) Seizures--in the absence of offending drugs or known metabolic derangements; e.g., uremia, ketoacidosis, or electrolyte imbalance OR b) Psychosis--in the absence of offending drugs or known metabolic derangements, e.g., uremia, ketoacidosis, or electrolyte imbalance
Hematologic Disorder	a) Hemolytic anemia--with reticulocytosis OR b) Leukopenia--< 4,000/mm ³ on ≥ 2 occasions OR c) Lymphopenia--< 1,500/ mm ³ on ≥ 2 occasions OR d) Thrombocytopenia--<100,000/ mm ³ in the absence of offending drugs
Immunologic Disorder	a) Anti-DNA: antibody to native DNA in abnormal titer OR b) Anti-Sm: presence of antibody to Sm nuclear antigen OR c) Positive finding of antiphospholipid antibodies on: 1. an abnormal serum level of IgG or IgM anticardiolipin antibodies, 2. a positive test result for lupus anticoagulant using a standard method, or 3. a false-positive test result for at least 6 months confirmed by Treponema pallidum immobilization or fluorescent treponemal antibody absorption test
Positive Antinuclear Antibody	An abnormal titer of antinuclear antibody by immunofluorescence or an equivalent assay at any point in time and in the absence of drugs

ANA testing

- Know that the rate of false positives or non-informative positives is high
- Don't order when you don't know what you are testing
 - Nonspecific aches and pain
 - Fatigue
 - Nonspecific rashes
- ANA are common, nonspecific, increase in frequency with age

Positive ANA

- **Systemic autoimmune disease** — A positive ANA is an essential component of the definition of some systemic autoimmune disorders, such as systemic lupus erythematosus (SLE), but can also be found in association with many autoimmune disorders that are not defined by these antibodies. As a result, the sensitivity of a positive ANA for a particular autoimmune disease can vary widely (show table 1A-1B) [3-5]:
 - SLE — 93 percent
 - Scleroderma — 85 percent
 - Mixed connective tissue disease — 93 percent
 - Polymyositis/dermatomyositis — 61 percent [3]
 - Rheumatoid arthritis — 41 percent
 - Rheumatoid vasculitis — 33 percent
 - Sjögren's syndrome — 48 percent
 - Drug-induced lupus — 100 percent
 - Discoid lupus — 15 percent
 - Pauciarticular juvenile chronic arthritis — 71 percent [4]
- **Specific organ autoimmune disease** — Positive ANAs are occasionally seen in patients with autoimmune diseases that are limited to a specific organ such as the thyroid gland, liver, or lung. The following sensitivities have been reported in these disorders [5-10]:
 - Hashimoto's thyroiditis — 46 percent [6]
 - Graves' disease — 50 percent [6]
 - Autoimmune hepatitis — 63 to 91 percent [5,7]
 - Primary biliary cirrhosis 10 to 40 percent [8]
 - Primary autoimmune cholangitis — 100 percent [9]
 - Idiopathic pulmonary arterial hypertension — 40 percent [10]

When to Refer to Rheum

- Assistance with establishing a diagnosis
- Need a procedure performed
 - (shoulder, wrist, ankle, small joint)
- Guidance of therapeutic dilemmas
 - Example - Unresponsive gout
- Interpretations of tests (radiographic and laboratory)
- Second or third opinion

References

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