Emergencies and Urgencies in Rheumatology

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Disclosures

Non-Declaration Statement: I have no relevant relationships with ineligible companies to disclose within the past 24 months. (Note: Ineligible companies are defined as those whose primary business is producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients.)

Objectives

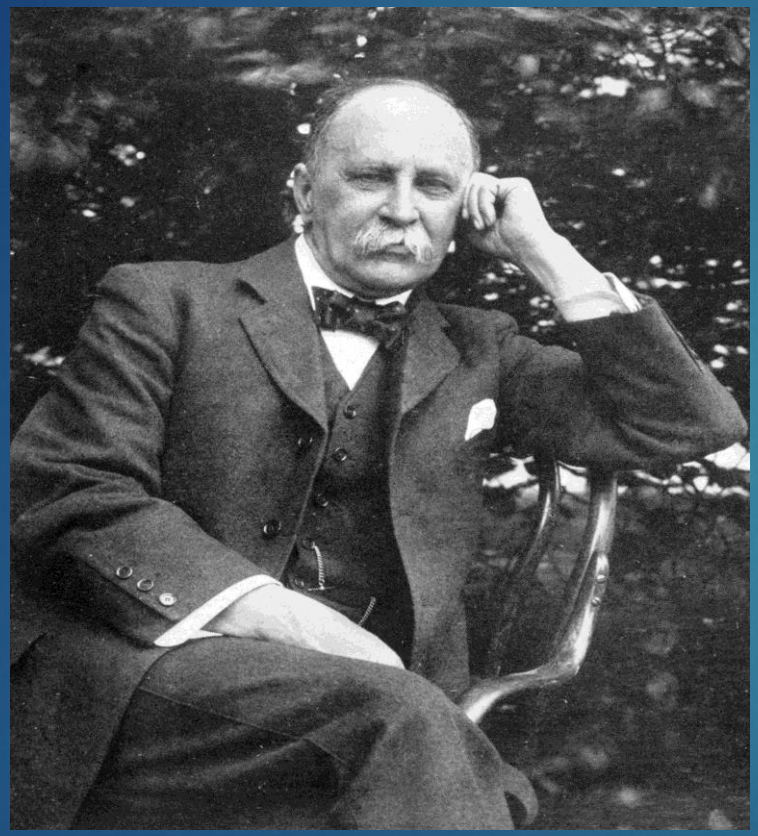
Upon completion of this session, participants will be able to:

-recognize rheumatic symptoms requiring urgent or emergent attention.

-select the laboratory and radiographic work-up indicated for rheumatic disease emergencies.

-recommend the appropriate treatment for rheumatic disease emergencies.

Sir William Osler



"William Osler c1912" by Unknown - [1]. Licensed under CC BY 4.0 via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:William_Osler_c1912.jpg#/media/File:William_Osler_c1912.jpg

"V-tach and a blood pressure of 60/pap is the easy stuff…

Arthritis and a rash are what really make us nervous."

"When a patient with arthritis (*and a rash*) walks in the front door, I walk out the back door".

Case 1

CC: Severe left knee pain

HPI: 35-year-old man

Developed severe pain and swelling in the left knee several hours after playing volleyball. He also noted that during the dialysis run that morning he had had a chill but felt well

PMH: 3 attacks of gout in the left great toe and the right knee 2 years before starting dialysis

Case 1

PE: Vital signs- T: 101°F, P: 100 bpm, BP 150/90.

He has difficulty getting onto the examination table because of knee pain. He is diaphoretic over the face and arms. The skin over the AV fistula is slightly erythematous, but the bruit is strong. There are two small abrasions over the left elbow. Examination of HEENT, chest, and abdomen are normal

Physical Findings

Left knee- swollen, slightly reddened, warm, and tender to palpation over the medial and lateral joint margins. Both active and passive flexion and extension are limited by pain. There is no laxity, but the exam is limited by pain

Multiple arthralgias…

- Mono-, oligo-, or polyarticular
- Acute vs. chronic
- Location, location, location
- Systemic features, constitutional symptoms
- Inflammatory vs. non-inflammatory

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Case 1

Acute inflammatory monoarticular arthritis and fever within 24 hours of dialysis, vigorous physical activity, and perhaps trauma in a patient with a history of gout

Signs of systemic illness: Fever, diaphoresis

Initial laboratory tests: WBC 22,000 with 95% PMNs, Hgb 10 g%

Question 1: What Is Differential Dx?

A. Knee trauma with hemarthrosis
B. Crystalline arthritis
C. Prepatellar bursitis
D. Septic arthritis

Differential Dx

A. Hemarthrosis with mild trauma could occur in renal failure because of tissue fragility and platelet dysfunction

B. Patients with crystalline arthritis in renal failure may show uric acid, oxalate, apatite, or CPPD crystals

C. Prepatellar bursitis produces pain, swelling, and erythema but does not limit extension of the knee

D. Bone and joint infections are common in dialysis patients because of vascular access and impaired immune defenses

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Question 2: What Diagnostic Tests?

A. Bone scan
B. X-ray of knee
C. Arthroscopy
D. MRI of knee
E. Arthrocentesis and synovial fluid analysis

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Question 2: Answer

Key point: **TAP THE JOINT!** Diagnosis must be made immediately. X-ray of the knee should be done if the tap is bloody. Synovial fluid analysis will differentiate between infection and crystals

Synovial Fluid Findings

-Synovial fluid WBC 60,000 with 98% PMNs

-No crystals seen on polarizing microscopy

-SF culture and sensitivity test request sent to the microbiology lab

-Blood cultures sent

-SF gram stain

SYNOVIAL FLUID ANALYSIS

Condition	Color	Clarity	WBC	Crystals	C&S
OSTEO	Amber	Clear	200 -2,000	–	–
TRAUMA	Pink Red	Clear-opaque	<2,000	–	–
INFLAM-MATORY	Yellow	Cloudy	2000-100,000	– +	–
INFECTION	Purulent	Opaque	>50,000 (>90%PMNs)	– +	+

Organisms Causing Septic Arthritis

S. aureus	37% to 65% (increasing rates of methicillin-resistantance)
Streptococci	22% (group B more common in the elderly)
Gram-negative bacilli	5% to 20%
Streptococcus pneumoniae	3%
Polymicrobial	<8%
Coagulase-negative Staphylococci	4%

West SG. *Rheumatology Secrets. 2020*

Treatment Bacterial Infectious Arthritis

Causative bacteria	Treatment
Gram-positive cocci on Gram stain	vancomycin, dosing based on renal function, but usually 15 mg/kg IV every 12 hours.
Gram-positive rod (usually *Listeria* in an immunocompromised host)	start ceftriaxone 2 g IV every 24 hours; if allergic to beta-lactams, could use vancomycin.
Gram-negative diplococci: usually *Neisseria gonorrhoeae* or *Neisseria meningitidis*	Treat with a third-generation cephalosporin, such as ceftriaxone (2 g IV daily) or cefotaxime (2 g IV every 8 hours).

West SG. *Rheumatology Secrets. 2020*

Treatment of Bacterial Infectious Arthritis

Causative bacteria	Treatment
Gram-negative rod	start a third-generation cephalosporin such as ceftriaxone (2 g IV daily) or cefotaxime (2 g IV every 8 hours). If allergic to cephalosporin, one can use ciprofloxacin (400 mg IV every 12 hours).
Negative Gram stain(immunocompetent patient)	start vancomycin plus ceftriaxone 2 g IV every 24 hours.
Human, dog, cat bites	start ampicillin-sulbactam.

West SG. *Rheumatology Secrets. 2020*

Treatment of bacterial infectious arthritis

- Adjust antibiotic when C&S available
- Usually 4-6 week duration of treatment
- SF should be aspirated daily or if needle drainage inadequate, arthroscopy (Orthopedic consult)

Other forms of infectious arthritis

- Viral-Hepatitis A/B/C, cytomegalovirus, parvo B19, HIV, EBV, others. Consider travel history.
- Fungal-consider in immunocompromised patients
- Lyme
- Mycoplasma
- Mycobacteria
- Syphilis
- Prosthetic Joint infection

Case Study 2

76y.o. ♀ presents w/ 4 week onset of worsening neck/bilateral shoulder/ bilateral “hip” discomfort, worse in morning. Sxs affect ROM at shoulders.

No similar previous sxs.

PMH- HTN, on HCTZ.

Takes Multivitamin, Calcium w/ vitamin D.

No recent illnesses.

Case Study 2

Exam: Vital signs unremarkable.

Appears uncomfortable.

Decreased shoulder ROM to below horizontal.

No detectable synovitis or tenderness in hands, wrists, knees, ankles or feet.

No detectable weakness.

Otherwise, unremarkable.

Case Study 2

ROS: (+) Right temporal headache, new onset X 2wks, new onset

(+) Jaw claudication

Exam: Right temporal artery w/ tenderness with reduced pulse.

Bilateral carotid bruits

What next???

GCA Epidemiology

-228,000 persons in the US

Lawrence RC, et al. *Arthritis and Rheumatism*. Volume 58, Issue 1, p.26-35.

-Adults, ♀>♂ (2 Xs), over age 50 y.o., incidence increases with age, 10Xs more likely in 80's y.o. than 50-60 y.o.

-Higher incidence rates in Scandinavian/Northern European descent

Egyptian tomb of Pa-Aton-Em-Heb 1350 B.C.

Appelboom T, van Eigem A. How ancient is temporal arteritis? J Rheumatol 1990; 17:929-31.

National Museum of Antiquities, Leiden.
http://img.rmo.nl/imageproxy/proxy.aspx?port=5297&maxwidth=500&cache=yes&filename=KE%2001510.jpg
accessed 23 Feb 2018

“The holy Virgin with Canon van der Paele” Flemish painter Jan van Eyck (1436)

Dequeker JV. Polymyalgia rheumatica with temporal arteritis, as painted by Jan vanEyck in 1436. Can Med Assoc J 1981; 124: 1597-8.

https://en.wikipedia.org/wiki/Virgin_and_Child_with_Canon_van_der_Paele accessed 22 Feb 2018

“The holy Virgin with Canon van der Paele” Flemish painter Jan van Eyck (1436)

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1990 Criteria for the Classification of Giant Cell (Temporal) Arteritis

1. Age at disease onset >=50 years

2. New headache

3. Temporal artery abnormality

   Temporal artery tenderness to palpation or decreased pulsation, unrelated to arteriosclerosis of cervical arteries

4. Elevated erythrocyte sedimentation rate

   Erythrocyte sedimentation rate >=50 mm/hour by the Westergren method

5. Abnormal artery biopsy

   Biopsy specimen with artery showing vasculitis characterized by a predominance of mononuclear cell infiltration or granulomatous inflammation, usually with multinucleated giant cells

Hunder GG, Bloch DA, Michel BA, Stevens MB, Arend WP, Calabrese LH, et al. The American College of Rheumatology 1990 criteria for the classification of giant cell arteritis. Arthritis Rheum 1990;33:1122---8.

GCA Clinical Presentation

40%-PMR sxs

20%-Cranial sxs (HA, scalp tenderness, jaw or tongue claudication and less commonly scalp necrosis, diplopia, or blindness)

20%-Both PMR and cranial sxs

15%-Fever (FUO) and systemic symptoms

5%-Other (cough, UE>LE claudication or synovitis)

GCA exam

-Temporal arteries (pulse, tenderness, nodularity)

-Pulses (diminished)

-Eye exam (cotton wool spots, ischemic optic neuropathy-swollen pale disc w/ blurred margins. W/ vision loss, pale, flat disc.)

-Bruits (cervical, supraclavicular)

-Cardiac auscultation (Ao regurgitation)

Dilated Branches of the Temporal Artery

GCA Work-up and Monitoring

Lab- CBC, ESR, CRP, hepatic function panel, (IL-6)

Temporal Artery Biopsy-necrotizing arteritis with a predominance of mononuclear cells or a granulomatous process w/ multinucleated giant cells

Radiographic studies- if indicated.

Aneurysmal dilation of the thoracic aorta

Aneurysmal dilation of the thoracic aorta

Temporal artery biopsy

What is the most feared complication of GCA?

VISION LOSS

Vision Loss in GCA

-Ophthalmological Emergency

-15% percent of patients (<1% after Tx begun)

-Can be an early sx

-Most commonly because of anterior ischemic optic neuritis

-Sudden, painless, and usually permanent

-May be preceded by amaurosis fugax, heat/exercise/posture-related blurring and diplopia

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PMR/GCA treatment

PMR

-Glucocorticoids

-Methotrexate

GCA

-Glucocorticoids

-ASA

-Methotrexate

-Tocilizumab (IL-6)

PMR Therapeutic Approach

Induction

- Prednisone, 15-20mg/day
- Goal: remission of myalgia, stiffness, constitutional symptoms
- Course: 1-2 months
- Consider bone protection

Maintenance

- Taper 20%/month
- Monitor clinically
- Monitor ESR & CRP
- When <10mg/day, taper slowly

Flares

- Reassess diagnosis-R/O, TA bx, consider large-vessel imaging
- Increase prednisone by 10-20%
- Reattempt taper
- Steroid-sparing: ?MTX

Weyand CM and Goronzy JJ. Giant Cell Arteritis and Polymyalgia Rheumatica. N Engl J Med, 2014; 371: 50-7.

GCA Therapeutic Approach

Induction

- Prednisone, 1mg/kg/day
- Goal: resolution of lab and clinical abnormalities
- Course: ~2-4 weeks
- Consider bone protection, ASA, GI protection

Maintenance

- Taper Prednisone 10-20%/month
- Monitor, including ESR, CRP
- Dose <10mg/day, taper by 1mg/month

Flares

- Severe: repeat induction
- Mild: increase prednisone by 10-20%
- Caution interpreting ESR/CRP with clinical symptoms
- Steroid-sparing: methotrexate, tocilizumab

Weyand CM and Goronzy JJ. Giant Cell Arteritis and Polymyalgia Rheumatica. N Engl J Med, 2014; 371: 50-7.

Maz M, et. Arthritis Care Research. 2021: 73(8): 1071–1087.

Glucocorticoid adverse effects

-Weight gain

-Glucose intolerance/Diabetes

-Hypertension

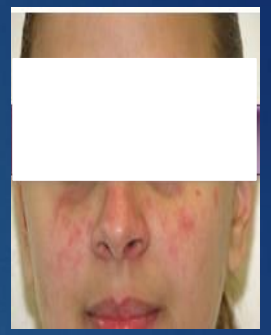
-Opportunistic Infections

-Psychosis

-Osteoporosis (DXA, Tx)

-Ocular effects (cataracts, IOP)

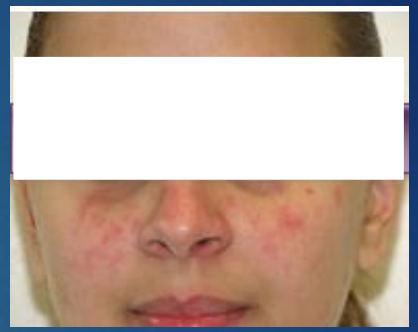
Case 3



History: A 23-year-old Hispanic female with no past medical history presented to the emergency department (ED) with an 8-week history of joint pain and swelling in the hands, knees, and ankles; fever; myalgias; pleuritic chest pain; weight loss; and a facial rash that worsened with sun exposure. She had been seen initially at a local clinic and treated for "cellulitis" with oral Keflex. Two days prior to this presentation, she was seen in another ED, found to have a temperature of 103 °F, proteinuria, and anemia; she was told it was a "viral syndrome" and discharged home

Case 3

<u>Exam:</u> T 37.9 °C, BP 130/90, painless ulceration on the palate, erythematous malar rash, diffuse lymphadenopathy, and synovitis of the MCP/PIP joints



<u>Labs:</u> WBC 2.5x10^9/L, total protein 9 g/dL, albumin 3 g/dL, Hgb 11g/dL, Hct 32%, BUN 11 mg/dL,
Cr .06 mg/dL

UA: 100 mg/dL protein, RBC 20–40/hpf, WBC 0–1/hpf
ANA+, anti-dsDNA+, Sm+

Question

What is your diagnosis?

a. **Viral Syndrome**
b. **Rheumatoid Arthtitis**
c. **Urinary Tract Infection**
d. **Systemic Lupus Erythematosus**

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Clinical Diagnosis of SLE Nephritis

- Increase in proteinuria is most common
  - Measured by spot protein:creatinine ratio >0.5 or 24-hour collection >500 mg/24 hours
  - The absolute increase in proteinuria that defines a nephritis flare is arbitrary
- Microscopic abnormalities on urinalysis
  - White cells or red blood cells >5 cells/hpf in the absence of infection or other causes
  - Cellular casts (white cell or red cell)
  - White cells and red blood cells are seen more frequently than casts

Hahn BH, McMahon MA, Wilkinson A, et al. *Arthritis Care Res (Hoboken).* 2012;64(6):797-808.

Lupus Renal Pathology

- Renal biopsy is used routinely to evaluate disease type and severity and to direct management
- All patients with clinical evidence of active lupus nephritis, and previously untreated, should have a kidney biopsy (unless strongly contraindicated)
- Treatment is based on biopsy results
  - Proliferative disease is treated more aggressively than mesangial and membranous disease because it progresses more rapidly and is more likely to cause chronic damage

Classes of Lupus Nephritis

Class of Lupus Nephritis*	Typical Laboratory/Clinical Findings	Prognosis
I Minimal mesangial		Good, no treatment
II Mesangial proliferative		Good, no treatment
III Focal proliferative	Hypertension, proteinuria, active urine sediment, +dsDNA, low C3/C4, rising Cr	Severe, aggressively treat
IV Diffuse proliferative		
V Membranous	Heavy proteinuria, bland sediment	Intermediate, treat
VI Advanced sclerosing		End-stage renal disease

*Patients can have mixed classes; for example, proliferative and membranous lupus nephritis.

Hahn BH, McMahon MA, Wilkinson A, et al. *Arthritis Care Res.* 2012;64(6):797-808. Markowitz GS, D'Agati VD. *Kidney Int.* 2007;71:491-495. Weening JJ, D'Agati VD, Schwartz MM, et al. *Kidney Int.* 2004;65:521-530.

Progression to End-Stage Renal Disease

- 10%–30% progress within 15 years
- Rate of end-stage renal disease (ESRD) in the United States due to SLE appears to be increasing (especially in younger age groups, African Americans, and the Southeast)
- Mortality rates from ESRD are stable
- 5-year mortality of children with ESRD is 22%
- Many disparities exist in access to treatment and transplantation

Costenbader KH, Desai A, Alarcón GS, et al. *Arthritis Rheum.* 2011;63(6):1681-1688; Hiraki LT, Feldman CH, Liu J, et al. *Arthritis Rheum*. 2012;64(8):2669-2676. Hiraki LT, Lu B, Alexander SR, et al. *Arthritis Rheum*. 2011;63(7):1988-1997.


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upus
initiative
Eliminating Health Disparities in Lupus
Eliminating health disparities • Cultura nence • Genetic and non-genetic f
• Genetic and non-genetic factors • ty • Signs and symptoms of disea
Complex disease • Social determi ts • Inte ciplinary care • Early diagnosis
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Renal • Cultural competence • Genetic and non-genetic factors • Health equity •
• Signs and symptoms of disease onset • Cardiovascular • Reproductive • Renal

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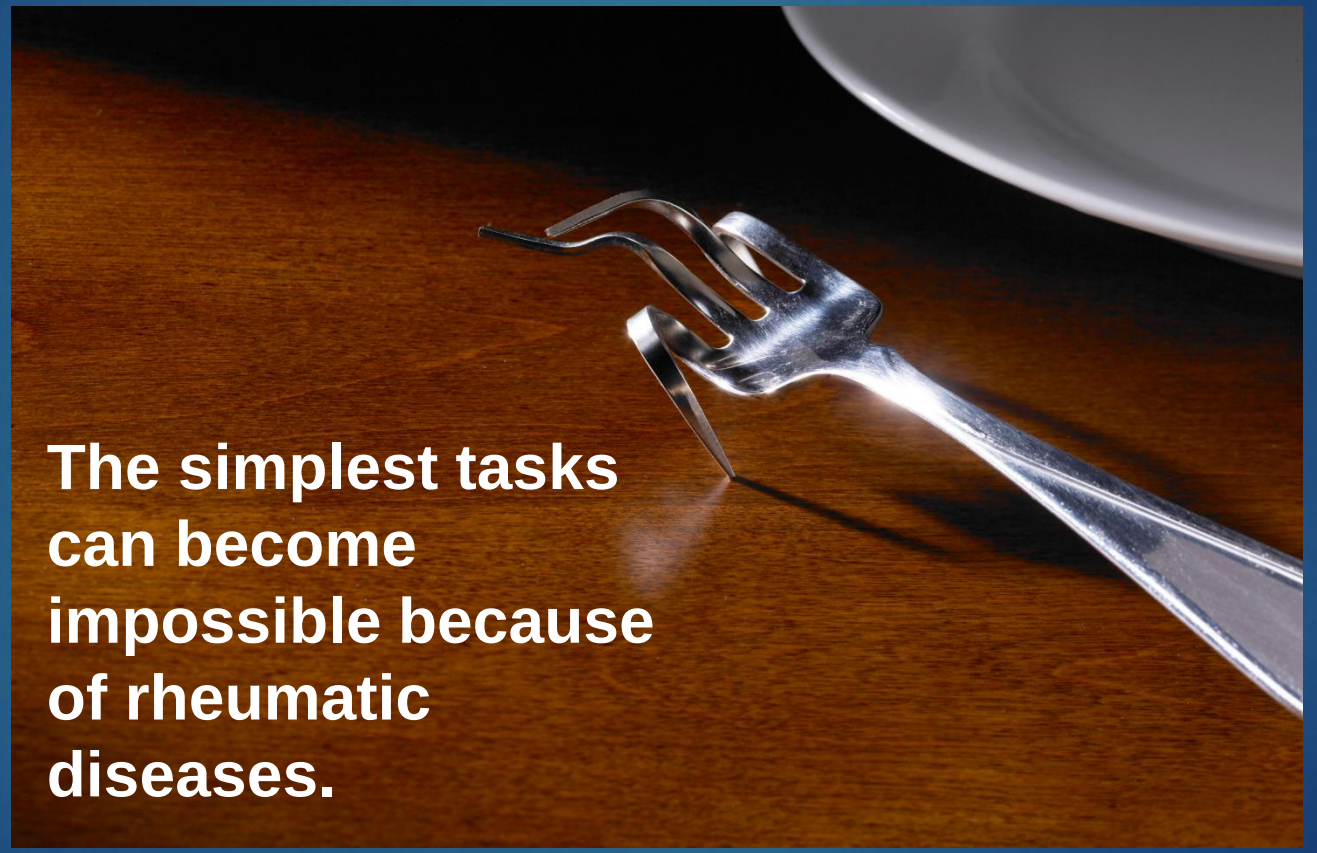
The ACR's *Simple Tasks* Campaign



www.SimpleTasks.org

Evidence-Based Medicine

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- Aringer, M, et al. 2019 European League Against Rheumatism/American College of Rheumatology Classification Criteria for Systemic Lupus Erythematosus. Arthritis Rheum. 2019; 71(9): 1400–1412 .
- Maz M, et al. 2021 American College of Rheumatology/Vasculitis Foundation Guideline for the Management of Giant Cell Arteritis and Takayasu Arteritis. Arthritis Care Research. 2021: 73(8): 1071–1087.