

## Poly-, Oligo-, and Monoarthritis Didactic User Manual Version 1.0

**Last edited:** 12<sup>th</sup> September 2016  
**Presentation Length:** 24 slides (40 minutes approx.)

### Slide 1 – Title Page

- These slides are part of the MENTOR Tutorial Series and the topic today is **POLY-, OLIGO-, AND MONOARTHRITIS**



### Animation

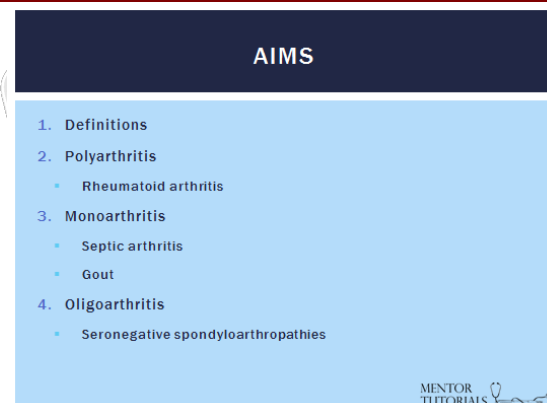
NONE

### Additional Notes:

NONE

### Slide 2 – Aims

MENTOR  
TUTORIALS



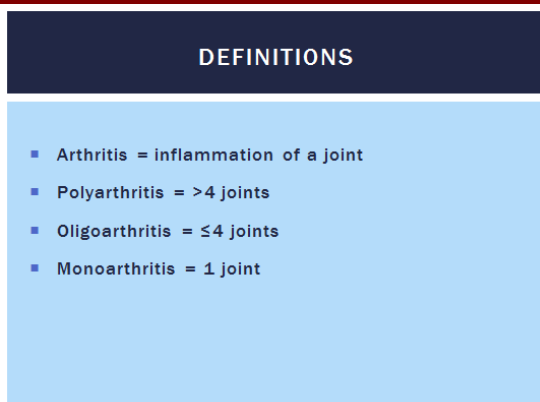
### Animation

NONE

### Additional Notes:

NONE

### Slide 3 – Definitions

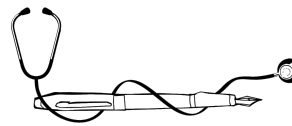


### Animation

NONE

### Additional Notes:

NONE



## Slide 4 – Causes of Polyarthritis

### CAUSES OF POLYARTHRITIS

1. Most common
  1. **Rheumatoid arthritis (RA)**
2. All the rest
  1. *Infectious* e.g. parvovirus, Lyme disease
  2. *Inflammatory* e.g. seronegative spondyloarthropathies, SLE, vasculitis
  3. *Metabolic* e.g. crystal arthropathy (gout and pseudogout)
  4. *Degenerative* e.g. osteoarthritis

### Animation

1. Most common
  - Rheumatoid arthritis (RA)
2. All the rest

NONE

### Additional Notes:

## Slide 5 – RA – Risk Factors

- Ratio Female 3:1 Male
- Increased risk if other autoimmune diseases present
- Increased risk with smoking
- Increased risk if family history

### RA – RISK FACTORS

#### Risk factors

- *Demographics* e.g. female, peak onset in middle age
- *PMHx* e.g. autoimmune disease
- *SHx* e.g. cigarettes
- *FHx* of RA

### Animation

1. Risk factors
2. Demographics
3. PMHx
4. SHx
5. FHx

NONE

### Additional Notes:

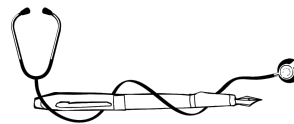
## Slide 6 – RA – Assessment

- This slide is a good opportunity to ask students to suggest symptoms in each category
- Articular symptoms:
  - Inflammatory arthritis (pain, swelling, and stiffness in the joints) worse in the mornings and after rest, better after physical activity (unlike osteoarthritis)
  - Usually symmetrical polyarthritis of small/medium joints, sparing DIPs. Less commonly presents with oligoarthritis or monoarthritis
  - Characteristic deformities include radial deviation at wrist, ulnar deviation at MCPs, boutonnière and swan neck deformity in fingers, Z thumbs
- Constitutional symptoms: low grade fever, generalized aches, weakness, malaise, tiredness
- Extra-articular symptoms:
  - Skin: e.g. nodules, vasculitic rash

### RA - ASSESSMENT

#### History

- *Usually insidious onset*
- *Articular symptoms* i.e. arthritis (typically MCPs, PIPs, MTPs), may progress to characteristic deformities
- *Constitutional symptoms*
- *Extra-articular symptoms* e.g. skin, eyes, neurological (including cervical cord compression), heart, lungs, bones, blood, renal, abdominal



- Eyes: e.g. episcleritis (normal vision) and scleritis (impaired vision)
- Neuro: e.g. carpal tunnel syndrome and cervical cord compression
- Heart: e.g. angina (coronary artery disease), pericarditis
- Lungs: e.g. pleural effusion, fibrosis
- Bones: e.g. osteopenia and fragility fractures
- Blood: e.g. anaemia

## Animation

1. History
2. Usually insidious onset
3. Articular symptoms
4. Constitutional symptoms
5. Extra-articular symptoms

NONE

## Additional Notes:

### Slide 7 – RA – Assessment (2)

- Pattern of joint involvement:
  - Assess small joints, elbows, shoulders, knees, hips, and spine (cervical spine often affected)

#### RA - ASSESSMENT

##### Examination

- *General inspection:* look for deformities, skin changes, scars, rheumatoid nodules
- *Hands:* inspect, palpate, functional assessment
- *Assess pattern of joint involvement*
- *Systemic:* heart, lungs, abdominal, neurological

## Animation

1. General inspection
2. Hands
3. Assess pattern of joint involvement
4. Systemic

NONE

## Additional Notes:

### Slide 8 – RA – Assessment (3)

- Rheumatoid factor:
  - Autoantibodies against the Fc portion of IgG
  - Identified in about 80% of patients with RA
  - High titre IgM RF is relatively specific for RA in the context of chronic polyarthritis
- Anti-citrullinated peptide: higher specificity for RA than RF
- Joint aspirate (Gram stain, crystals, cell count, culture):
  - Useful when considering ddx
  - Inflammatory effusion contains high WCC (mostly neutrophils)
- USS: measure volume of inflamed tissue
- X-rays of affected joints: features of RA include:
  - Periarticular osteopenia
  - Joint space narrowing
  - Bony erosions
- ACR – American college of Rheumatology

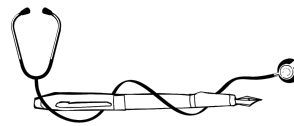
#### RA - ASSESSMENT

##### Investigations

- *Bloods* e.g. FBC, CRP/ESR, rheumatoid factor, anti CCP
- *Joint aspirate*
- *Radiology* e.g. USS, MRI, x-rays

##### Diagnosis (2010 ACR/EULAR criteria)

- Total of 10 points awarded in 4 domains (pattern of joint involvement, duration of symptoms, inflammatory markers, and serology)
- ≥6 points = diagnosis of RA



- EULAR – European League against Rheumatism

## Animation

## Additional Notes:

1. Investigations
2. Bloods
3. Joint aspirate
4. Radiology
5. Diagnosis (2010 ACR/EULAR criteria)
6. Total of 10 points awarded in 4 domains
7.  $\geq 6$  points = diagnosis of RA

## Slide 9 – RA – Management

- NSAIDs/corticosteroids used for short term only and not disease modifying
- DMARDs = disease modifying anti-rheumatic drugs:
  - All patients with RA should be started on a DMARD as soon as possible
  - Before starting must check for hepatitis
  - Generally require monitoring of e.g. FBC, LFTs
- Biologics:
  - Monoclonal antibodies directed against specific target molecules
  - Must check for latent tuberculosis before starting
  - TNF alpha antagonists include etanercept, infliximab, and adalimumab
  - Anakinra is an IL-1 antagonist
  - Rituximab is an anti-CD20 B cell depleting monoclonal antibody
  - Tocilizumab is an IL-6 antagonist

## RA - MANAGEMENT

### Management

1. **Conservative**
  - Patient education.
  - Physiotherapy, mobility aids, orthoses.
  - Occupational therapy.
2. **Medical**
  - NSAIDs
  - Corticosteroid injection
  - DMARDs e.g. methotrexate (1<sup>st</sup> line), hydroxychloroquine, sulfasalazine
  - Biologics e.g. TNF antagonists, anakinra, rituximab, tocilizumab
3. **Surgical (T&O)** e.g. joint replacement, orthodesis

## Animation

## Additional Notes:

1. Management
2. Conservative
3. Medical
4. Surgical

DAS-28 (disease activity score) is a composite score consisting of number of swollen joints, number of tender joints, CRP and visual analogue score.  $< 2.6$  is considered remission;  $> 5.1$  is very active disease requiring consideration of biologics.

## Slide 10 – Causes of Monoarthritis

- Septic arthritis
  - Bacterial infection of a joint
  - The most serious cause of monoarthritis because it can lead to sepsis and to irreversible joint damage
- Gout: monosodium urate crystals
- Pseudogout: calcium pyrophosphate crystals
- RA: rheumatoid arthritis
- SLE: systemic lupus erythematosus

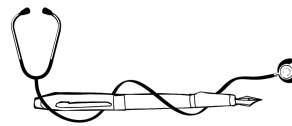
## CAUSES OF MONOARTHRITIS

1. **Most serious**
  - **Septic arthritis**
2. **All the rest**
  - Metabolic e.g. **crystal arthropathy** (gout and pseudogout)
  - Inflammatory e.g. seronegative spondyloarthropathies, RA, SLE
  - Infectious e.g. Lyme disease
  - Trauma
  - Degenerative e.g. osteoarthritis

## Animation

## Additional Notes:

1. Most serious
  - Septic arthritis
2. All the rest



## Slide 11 – Septic Arthritis – Risks and Presentation

- Age: more common in children, young adults and elderly
- PMHx: indicates risk factors. Pre-existing joint problems such as RA, joint surgery, crystal arthropathy. Other risk factors: sickle cell disease, haemophilia.
- SHx: IVDU (intravenous drug user)
- History: not moving limb (movement/weight bearing causes intense pain), often large joint (e.g. knee)
- Examination: often systemically unwell, patient will not allow passive movement

### SEPTIC ARTHRITIS – RISKS AND PRESENTATION

#### Risk factors

- Demographics e.g. age
- PMHx e.g. diabetes, RA, joint surgery, immunosuppression (HIV), skin infection
- SHx e.g. IVDU

#### Clinical features

- History: acutely painful, swollen joint(s)
- Exam: fever, inflamed joint(s), tender on movement, may be effusion

### Animation

1. Risk factors
2. Demographics
3. PMHx
4. SHx
5. Clinical features
6. History
7. Exam

NONE

### Additional Notes:

## Slide 12 – Septic Arthritis – Investigation and Management

- As per sepsis: bloods and culture with lactate
- Joint aspirate (Gram stain, crystals, cell count culture). An initial Gram stain which can be performed rapidly can give the diagnosis immediately.
- Management: general principles as per treatment of sepsis

### SEPTIC ARTHRITIS – INVESTIGATION AND MANAGEMENT

#### Investigations

- Bloods e.g. FBC, U&Es, culture, lactate
- Urine dip
- Joint aspirate
- Radiology e.g. x-ray, USS, MRI

#### Management

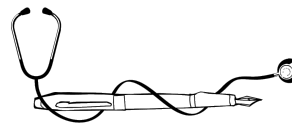
- Resuscitation (ABC): consider airway support, O2, IV fluids, catheter, monitor fluid balance
- Meds: IV antibiotics and analgesia
- Surgery (T&O): urgent joint drainage and irrigation

### Animation

1. Investigations
2. Bloods
3. Urine dip
4. Joint aspirate
5. Radiology
6. Management
7. Resuscitation (ABC)
8. Meds
9. Surgery (T&O)

NONE

### Additional Notes:



## Slide 13 – Gout – Risks and Presentation

- Risk factors generally include causes of increased serum urate.
- Increased production or urate:
  - Red meat, seafood, alcohol
  - Severe psoriasis
  - Lympho/myeloproliferative disorders
  - Cytotoxic drug therapy
- Decreased excretion of urate:
  - Renal insufficiency
  - Thiazide (and loop) diuretics
  - Low dose aspirin
  - Ciclosporin
  - Alcohol
- Gout is also associated with the metabolic syndrome (central obesity, hypertension, hyperglycaemia, hyperlipidaemia)

### GOUT – RISKS AND PRESENTATION

#### Risk factors

- Demographics e.g. male
- PMHx e.g. obesity, hypertension, diabetes, CKD
- DHx e.g. thiazides
- SHx e.g. diet (meat, seafood, alcohol)

#### Clinical features

- History: acutely painful, swollen joint(s), pain reaches peak within 24h
- Exam: fever, joint inflammation, may be tophi

### Animation

1. Risk factors
2. Demographics
3. PMHx
4. DHx
5. SHx
6. Clinical features
7. History
8. Exam

NONE

### Additional Notes:

## Slide 14 – Gout – Investigation and Management

- Differential diagnosis is septic arthritis so it's important to exclude if clinically suspicious.
- Serum urate levels are of limited value – may be high, normal, or low in an acute flare
- Corticosteroids can be oral or intra-articular
- Consider contraindications to NSAIDs, colchicine and corticosteroids
- Don't start allopurinol until acute attack has settled completely, but continue if patient is already taking

### GOUT – INVESTIGATION AND MANAGEMENT

#### Investigations

- Bloods e.g. U&E, CRP/ESR, urate
- Joint aspirate (negatively birefringent crystals)
- Urine e.g. uric acid
- Radiology e.g. x-ray

#### Management

- Conservative e.g. elevation, ice pack
- Meds e.g. NSAIDs, colchicine, corticosteroids

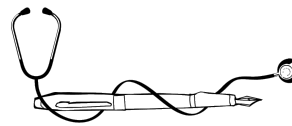
After acute attack: address reversible risk factors, consider allopurinol

### Animation

1. Bloods
2. Joint aspirate
3. Urine
4. Radiology
5. Management
6. Conservative
7. Meds
8. After acute attack

NONE

### Additional Notes:



## Slide 15 – Causes of Oligoarthritis

### CAUSES OF OLIGOARTHRITIS

1. Most serious
  - Septic arthritis – (usually monoarthritis)
2. All the rest
  - Metabolic e.g. crystal arthropathy
  - Inflammatory e.g. **seronegative spondyloarthropathies**, RA, SLE
  - Infectious e.g. Lyme disease
  - Degenerative e.g. osteoarthritis

### Animation

1. Most serious
  - Septic arthritis
2. All the rest

NONE

### Additional Notes:

## Slide 16 – Seronegative Spondyloarthropathies

- Seronegative spondyloarthropathies
  - A group of inflammatory disorders which cause arthritis of the spine and sacroiliac joints
  - Seronegative because these diseases usually do not feature an elevated RF
- IBD = inflammatory bowel disease

### SERONEGATIVE SPONDYLOARTHRITIS

1. Ankylosing spondylitis
2. Postinfective (reactive) arthritis
3. Psoriatic arthritis
4. IBD-associated arthritis

### Animation

NONE

NONE

### Additional Notes:

## Slide 17 – Ankylosing Spondylitis

- Articular symptoms:
  - Lumbar spine involvement will cause low back pain, worse in the morning or after rest, relieved by physical activity
  - Sacroiliac involvement typically causes alternating buttock pain
  - Enthesitis typically involves the Achilles tendon insertion or plantar fascia
- Constitutional symptoms, e.g. tiredness, occasionally fever
- Extra-articular features:
  - Eyes: e.g. acute Anterior uveitis
  - Skin: e.g. psoriasis
  - Lungs: e.g. Apical fibrosis
  - Heart: e.g. Aortic regurgitation, angina (coronary artery disease)
  - Bones: e.g. osteopenia
  - Neuro: e.g. Atlanto-axial subluxation, cord compression, cauda equina syndrome
- 'Question mark' posture refers to typical appearances of deformed spine when viewed

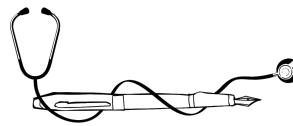
### ANKYLOSING SPONDYLITIS

#### History

- Typical patient is a young man
- Articular symptoms e.g. arthritis (lumbar spine, sacroiliac joints, peripheral joints), enthesitis, dactylitis
- Constitutional symptoms
- Extra articular symptoms e.g. eyes, skin, lungs, heart, bones, neuro

#### Examination

- General inspection e.g. spinal deformity ('question mark')
- Measure range of movement e.g. chest expansion, spinal flexion, Schober test
- Heart e.g. AR murmur
- Lungs e.g. fibrosis crackles



laterally (loss of lumbar lordosis, fixed thoracic kyphosis)

- Schober's test:
  - Measurement of lumbar spine flexion

## Animation

1. History
2. Typical patient is a young man
3. Articular symptoms
4. Constitutional symptoms
5. Extra articular symptoms
6. Examination
7. General inspection
8. Measure range of movement
9. Heart
10. Lungs

## Additional Notes:

Schober's test:

- Mark placed 5cm below and 10cm above L5 vertebra (length between points is 15cm)
- Patient is asked to touch their toes whilst keeping knees straight (to flex spine)
- The distance between the two points should increase by at least 5cm to become >20cm in a normal examination.

## Slide 18 – Reactive Arthritis

- Articular symptoms:
  - Pattern of joint involvement: usually asymmetrical oligoarthritis, less commonly polyarthritis, spinal or sacroiliac
  - Enthesitis = inflammation of tendon insertion points
  - Dactylitis = inflammation of a digit (sausage finger)
- Constitutional symptoms: e.g. fever, tiredness, weight loss
- Extra-articular symptoms:
  - Eyes: e.g. conjunctivitis, anterior uveitis
  - Skin lesions: e.g. keratoderma blenorrhagica (hyperkeratotic lesions on palm and soles), erythema nodosum (painful nodules on legs), circinate balanitis

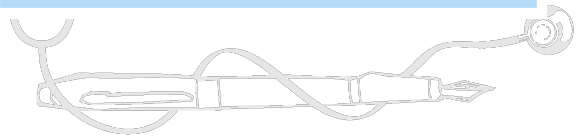
## REACTIVE ARTHRITIS

### History

- Onset of symptoms 1-4 weeks after infection (diarrhoea or STI)
- Articular symptoms e.g. arthritis (usually asymmetrical oligoarthritis) enthesitis, dactylitis
- Constitutional symptoms
- Extra articular symptoms e.g. eyes, oral ulcers, skin lesions

### Examination

- General inspection e.g. joints, skin, eyes, mouth
- Assess pattern of joint involvement



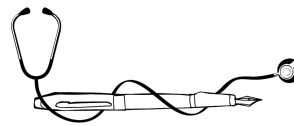
## Animation

1. History
2. Onset of symptoms 1-4 weeks after infection
3. Articular symptoms
4. Constitutional symptoms
5. Extra articular symptoms
6. Examination
7. General inspection
8. Assess pattern of joint involvement

NONE

## Additional Notes:





## Slide 19 – Psoriatic Arthritis

- Ask the students what is the pattern of joint involvement – they can't get it wrong!
- Pattern of joint involvement – 5 types:
  - Predominantly DIP joints
  - RA-like symmetrical polyarthritis
  - Asymmetrical oligoarthritis
  - Sacroiliitis
  - Arthritis mutilans (uncommon, extremely deforming and destructive and results in telescoping of digits)
- Enthesitis = inflammation of tendon insertion points
- Dactylitis = inflammation of a digit (sausage finger)
- Extra-articular features:
  - Skin: e.g. psoriasis, nail pitting and onycholysis
  - Eyes: uveitis, conjunctivitis

### PSORIATIC ARTHRITIS

#### History

- *Articular symptoms* e.g. arthritis (usually polyarthritis including DIPs), enthesitis, dactylitis
- *Extra articular symptoms* e.g. skin, eyes

#### Examination

- *General inspection* e.g. joints (arthritis mutilans), skin (psoriasis), eyes
- *Assess pattern of joint involvement*

### Animation

1. History
2. Articular symptoms
3. Extra articular symptoms
4. Examination
5. General inspection
6. Assess pattern of joint involvement

NONE

### Additional Notes:

## Slide 20 – IBD-Associated Arthritis

- Extra-articular symptoms:
  - Eyes: e.g. uveitis, episcleritis
  - Skin: e.g. erythema nodosum, pyoderma gangrenosum
  - Lungs: e.g. fibrosis

### IBD-ASSOCIATED ARTHRITIS

#### History

- *Articular symptoms* e.g. arthritis (may be spinal, sacroiliac, or peripheral)
  - Type 1 arthropathy: acute, ≤6 joints, linked to IBD flares, self limiting <6 months
  - Type 2 arthropathy: chronic, polyarticular, not linked to IBD flares
- *Extra articular symptoms* e.g. eyes, skin, lungs

#### Examination

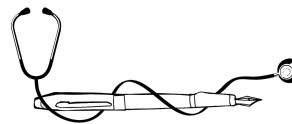
- *General inspection* e.g. joints, skin, eyes
- *Assess pattern of joint involvement*

### Animation

1. History
2. Articular symptoms
3. Extra articular symptoms
4. Examination
5. General inspection
6. Assess pattern of joint involvement

NONE

### Additional Notes:



## Slide 21 – Spondyloarthropathies – Investigations

- HLA-B27:
  - An MHA molecule, involved in presentation of peptides to the immune system. HLA-B27 is useful for diagnosis in the absence of radiological changes. High sensitivity (present in about 90% of individuals with ankylosing spondylitis). Poor specificity (only about 5% of HLA-B27 positive patients have ankylosing spondylitis)
- Joint aspirate (Gram stain, crystals, cell count, culture). Inflammatory effusion contains high white cells (predominantly neutrophils)
- Joint x-rays in psoriatic arthritis depend on joint involvement pattern and may show:
  - Erosions with proliferation of adjacent bone
  - Pencil in cup deformity from osteolysis in arthritis mutilans
  - Ankyloses
  - Sacroiliitis
- MRI more sensitive, particularly in early disease

### SPONDYLOARTHROPATHIES - INVESTIGATIONS

- Bloods e.g. FBC, CRP, ESR, HLA-B27
- Joint aspirate
- GUM swabs (postinfective arthritis)
- Stool (postinfective arthritis)
- Radiology e.g. x-ray, MRI

### Animation

1. Bloods
2. Joint aspirate
3. GUM swabs
4. Stool
5. Radiology

NONE

### Additional Notes:

## Slide 22 – Spondyloarthropathies – Management

- DMARDs = disease modifying antirheumatic drugs.
  - Often used for peripheral arthritis
  - Before starting, must check for hepatitis
  - Requires monitoring (e.g. FBC/LFTs)
- Biologics:
  - Biologics are monoclonal antibodies, directed against specific target molecules
  - Before starting biologics, must check for latent tuberculosis
  - TNF alpha antagonists include etanercept, infliximab, and adalimumab

### SPONDYLOARTHROPATHIES - MANAGEMENT

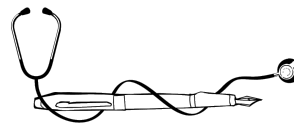
1. Conservative e.g. patient education, smoking cessation, physiotherapy, occupational therapy
2. Meds vs articular symptoms
  1. NSAIDs
  2. Intra articular steroid injections
  3. DMARDs e.g. sulfasalazine, methotrexate, leflunomide
  4. Biologics e.g. TNF alpha antagonists
3. Surgery (T&O) e.g. joint replacements

### Animation

1. Conservative
2. Meds
3. Surgery (T&O)

NONE

### Additional Notes:



## Slide 23 – Any Questions?

ANY QUESTIONS?

Animation

NONE

Additional Notes:

NONE

## Slide 24 – Further Reading

- So that concludes the presentation. Important areas of further reading are covered by our other presentations...

FURTHER READING

- Poly-, mono-, and oligoarthritis cases (MENTOR)
- Connective tissue disorders (MENTOR)
- Connective tissue disorders cases (MENTOR)
- UpToDate, Inc. 95 Sawyer Rd, Waltham, MA 02453, Wolters Kluwer, [www.uptodate.com](http://www.uptodate.com)

Animation

NONE

Additional Notes:

NONE