INFLAMMATORY/AUTOIMMUNE AND DEGENERATIVE JOINT DISEASES

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Outline

- Introduction
- Assessment / evaluation
- OA vs RA
- Treatment
JOINT PAIN
Introduction

- Arthritis = disorder of joints
- > 100 types of arthritis
- Various etiologies
- Global socio-economic burden
- Young - elderly
ARTHRITIS will INCREASE as the population grows and ages

Diagnosed and future projections*

![Graph showing an increase in arthritis from 2000 to 2045.](image)

*Doctor diagnosed

What is the social burden of MSK disorders in Malaysia?

Based on data from National Institute of Health, Malaysia (Year 2000),

16,000 years of healthy life lost

15,200 years lost due to disability

1 out of 10 patients becomes disabled

Assessment

- Articular or non-articular
- Inflammatory or non-inflammatory
- Acute or chronic
- Monoarticular or polyarticular
- Extra-articular signs
ARTICULAR

- Internal/deep joint pain
- Reduced ROM
- Effusion, synovial thickening, deformity
- Instability
- Crepitations, clicking, popping, or locking

PERIARTICULAR

- > Pain with active motion
- ROM preserved
- Inflammation away from joint
- No deformity
ARTHRITE

INFLAMMATORY

- Cardinal signs
- Systemic Sx
- Stiffness > 1 hr
- Laboratory: raised ESR/CRP

NON-INFLAMMATORY

- No signs
- Stiffness < 1 hr
- Intermittent
- Triggers: trauma, repeated use
- Degenerative
- Tumour
<table>
<thead>
<tr>
<th>Degenerative</th>
<th>Inflammatory</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Osteoarthritis (OA)</strong></td>
<td></td>
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<tr>
<td>Post-traumatic arthritis</td>
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<tr>
<td>Arthritis following dysplasia</td>
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<tr>
<td>Osteonecrosis</td>
<td></td>
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<tr>
<td>Osteochondritis dissecans</td>
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<tr>
<td><strong>Rheumatoid arthritis (RA)</strong></td>
<td></td>
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<tr>
<td>SLE</td>
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<tr>
<td>Spondyloarthritis</td>
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<tr>
<td>Gout</td>
<td></td>
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<tr>
<td>Pseudogout</td>
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</tbody>
</table>
Rapidly destructive coxarthrosis as early presentation of Rheumatoid Arthritis in a young women: A case report.

Wahinuddin S*, Anwar SMA, Mohd SB
Faculty of Medicine, University Kuala Lumpur, Royal College of Medicine Perak, Malaysia
HISTORY

- Onset
  - progression
  - distribution of disease
  - stiffness
  - triggering, aggravating or relieving factor
  - diurnal variation
  - other systemic feature
  - functional disability

- General systematic medical history.
- Past medical and surgical history.
- Family history.
- Drug history.
Osteoarthritis - pathophysiology

- Disease of cartilage
- Primary vs Secondary
- Unknown triggering factor for Primary OA
- **IL-1**: pro-inflammatory cytokine, inducing chondrocytes & synovial cells to synthesize MMPs → degrade articular cartilage.
- IL-1 suppresses synthesis of type II collagen and proteoglycans and inhibits the transforming GF stimulated chondrocyte proliferation
- **Leptin**
RA – Immunopathogenesis

- Unknown
- Complex

Diagram:
- Smoking
- Infection
- Genetic Susceptibility
- Textile dust
- Trauma
- etc
**EXTENDED REPORT**

**Occupational exposure to textile dust increases the risk of rheumatoid arthritis: results from a Malaysian population-based case-control study**

Chun Lai Too,1,2 Nor Asiah Muhamad,1 Anna Ilar,3 Leonid Padyukov,2 Lars Alfredsson,3 Lars Klareskog,2 Shahnaz Murad,1 Camilla Bengtsson,3 MyEIRA Study Group


**Smoking interacts with HLA-DRB1 shared epitope in the development of anti-citrullinated protein antibody-positive rheumatoid arthritis: results from the Malaysian Epidemiological Investigation of Rheumatoid Arthritis (MyEIRA)**

Chun Lai Too1,2,†, Abqariyah Yahya2,3, Shahnaz Murad2, Jasbir Singh Dhillon2, Per Tobias Larsson1, Nor Asiah Muhamad2, Nor Aini Abdullah2, Amal Nasir Mustafa2, Lars Klareskog1, Lars Alfredsson3, Leonid Padyukov1 and Camilla Bengtsson3, for MyEIRA study group

Too et al. Arthritis Research & Therapy 2012, 14:R89

**Familial Risks of Rheumatoid Arthritis: results from the Malaysian Epidemiological Investigation of Rheumatoid Arthritis case control study**


Presented in EULAR Congress, Madrid 2017
Joint impact of osteoarthritis and rheumatoid arthritis
© Adapted from MedicineNet, Inc.
Characteristics

OA
- Localized
- Asymmetric
- Large joints
- Older age
- Aggravated by activities
- No diagnostic test
- Radiologic imaging
- Symptomatic treatment

RA
- Systemic
- Symmetric
- Small joints
- Younger age
- Morning stiffness
- Labs: RF, anti CCP, ESR/CRP
- Radiologic imaging
- Specific treatment
To be applied to patients: (1) who have \( \geq 1 \) joint with definite **synovitis**, excluding the DIP joints, 1\textsuperscript{st} MTP joints, and CMC joints, and (2) in whom the synovitis cannot be explained by another disease.

### 2010 ACR/EULAR RA Classification Criteria

<table>
<thead>
<tr>
<th>Swollen/Tender Joints (0-5)</th>
<th>Symptom Duration (0-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0  1 large joint</td>
<td>0  &lt; 6 wk</td>
</tr>
<tr>
<td>1  2-10 large joints</td>
<td>1  ( \geq 6 ) wk</td>
</tr>
<tr>
<td>2  1-3 small joints</td>
<td><strong>Acute-Phase Reactants (0-1)</strong></td>
</tr>
<tr>
<td>3  4-10 small joints</td>
<td>0  Normal CRP and normal ESR</td>
</tr>
<tr>
<td>5  &gt; 10 joints (( \geq ) small joint)</td>
<td>1  Abnormal CRP or abnormal ESR</td>
</tr>
<tr>
<td></td>
<td><strong>Serology (0-3)</strong></td>
</tr>
<tr>
<td></td>
<td>0  Negative RF and ACPA</td>
</tr>
<tr>
<td></td>
<td>2  Low-positive RF or ACPA</td>
</tr>
<tr>
<td></td>
<td>3  High-positive RF or ACPA</td>
</tr>
</tbody>
</table>

Patients with a score of \( \geq 6 \) have "definite" RA

**ACPA** = anti-citrullinated protein antibody; **ACR/EULAR** = American College of Rheumatology/European League Against Rheumatism; **CRP** = C-reactive protein; **ESR** = erythrocyte sedimentation rate; **RA** = rheumatoid arthritis; **RF** = rheumatoid factor.

OA – PHYSICAL EXAM

- Inspection
- Palpation
- ROM
RA – Clinical Picture

- Insidious onset /palindromic
- Morning stiffness
- Polyarthritis
- commonly small joint of the hands (exclude DIP)
- Subcutaneous nodules
- Labs
Radiologic Findings

RHEUMATOID ARTHRITIS

- Periarticular osteoporosis
- Narrow Joint space
- Erosions
- Subluxations and deformities
Radiologic Findings: OA

- Cyst formation
- Osteophytes
- Loss of joint space
- Subchondral sclerosis
**Synovial Fluid Analysis**

<table>
<thead>
<tr>
<th></th>
<th>Normal</th>
<th>Non-Inflammatory</th>
<th>Inflammatory</th>
<th>Septic</th>
<th>Hemorrhagic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarity</td>
<td>Transparent</td>
<td>Transparent</td>
<td>Translucent</td>
<td>Opaque</td>
<td>Bloody</td>
</tr>
<tr>
<td>Colour</td>
<td>Clear</td>
<td>Yellow</td>
<td>Yellow</td>
<td>Dirty/Yellow</td>
<td>Red</td>
</tr>
<tr>
<td>Viscosity</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>Variable</td>
<td>Variable</td>
</tr>
<tr>
<td>WBC/mm³</td>
<td>&lt;200</td>
<td>200-2,000</td>
<td>2000-10,000 (up to 100,000)</td>
<td>&gt;80,000</td>
<td>200-2,000</td>
</tr>
<tr>
<td>PMNs %</td>
<td>&lt;25%</td>
<td>&lt;25%</td>
<td>&gt;50%</td>
<td>&gt;75%</td>
<td>50-75%</td>
</tr>
</tbody>
</table>

Depending on the clinical scenario, synovial fluid is analysed for:

- Cell count and differential
- Crystals
- Culture and sensitivity (if septic arthritis suspected)
- Cytology (if malignancy suspected)
Treatment

- No curative treatment for both degenerative or non-inflammatory and inflammatory or autoimmune joint disorders.
- Early diagnosis and treatment of AIJD may halt the progression of the disease.
- Gout, reactive arthritis are treatable if diagnosed early.
OA - TREATMENT

- Occupational & Physiotherapy
- NSAIDs and analgesics
- Intraarticular injections
- Arthrodesis
- Joint replacement
- Reconstructive surgery
RA - TREATMENT

- Pharmacological
  - NSAIDs/Analgesics
  - DMARDs (conventional or biologic)
- Non-pharmacological
  - physio/OT
- Surgery
### Summary of diagnostic criteria differences between OA and RA

<table>
<thead>
<tr>
<th>Arthritis</th>
<th>History</th>
<th>P/E</th>
<th>Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OA</strong></td>
<td>▪ Palpable body joint enlargement&lt;br&gt;▪ EMS &lt; 30 min&lt;br&gt;▪ Pain</td>
<td>▪ ↓ ROM&lt;br&gt;▪ Joint malalignment&lt;br&gt;▪ crepitus</td>
<td>Radiologic&lt;br&gt;▪ Osteophytes&lt;br&gt;▪ Narrow joint space&lt;br&gt;Lab&lt;br&gt;▪ Clear synovial fluid</td>
</tr>
<tr>
<td><strong>RA</strong></td>
<td>▪ Pain duration ≥ 6 wks&lt;br&gt;▪ EMS &gt; 30 min&lt;br&gt;▪ Systemic symptoms (e.g. fatigue, anorexia)</td>
<td>▪ Synovitis&lt;br&gt;▪ Symmetrical&lt;br&gt;▪ Joint destruction&lt;br&gt;▪ X-tra articular Sx</td>
<td>Radiologic&lt;br&gt;▪ Erosions on X-ray/MRI&lt;br&gt;▪ Synovitis (US/MRI)&lt;br&gt;Serology&lt;br&gt;▪ ESR/CRP&lt;br&gt;▪ Anti CCP&lt;br&gt;▪ RF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>CTD</th>
<th>arthritis</th>
<th>SpA</th>
<th>Infectious</th>
<th>Crystal arthritis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symmetry</td>
<td>RA</td>
<td>SLE</td>
<td>Vascilitis</td>
<td>AS</td>
<td>PsA</td>
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<tr>
<td></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>++</td>
<td>++</td>
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<tr>
<td>Symmetric</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asymmetric</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Inflammatory</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Noninflammatory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>Pauciarticular</td>
<td>Polyarticular</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Joint</td>
<td>Spine-cervical/</td>
<td>thoracic/lumbar</td>
<td>SI joint</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>involvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Small joints</td>
<td>Wrist</td>
<td>CMC</td>
<td>MCP</td>
<td>PIP</td>
<td>DIP</td>
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<td></td>
<td>+</td>
<td>++</td>
<td>++</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Medium &amp;</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large joints</td>
<td>Shoulers</td>
<td>Elbows</td>
<td>Hips/knees</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Systemic</td>
<td>Fevers, uveitis, nodules, pneumoniti</td>
<td>Malar rash, oral ulcers, pleurisy</td>
<td>Rash, gangrene, CVA, headache, wrist drop, hemoptysis, GIT bleeding, proteinuria, h'turia</td>
<td>Uveitis, pneumonitis</td>
<td>Psoriasis, uveitis</td>
</tr>
<tr>
<td>Laboratory tests</td>
<td>RF, anti CCP</td>
<td>ANA, dsDNA, anti Sm, Urinalysis with proteinuria &amp; hematuria, C3C4</td>
<td>ESR &gt; 50, ANCA, temporal artery or other tissue Bx, urinalysis with proteinuria &amp; hematuria</td>
<td>HLA-B27</td>
<td>Test for Chlamydia, Gonorrhea, Salmonella, Shigella titres</td>
</tr>
<tr>
<td>Radiologic</td>
<td>Erosions</td>
<td>No erosions</td>
<td>Pulm infiltrates/nodules, angiography – dilatation &amp; stenosis</td>
<td>Sacroilitis</td>
<td>Erosions, Sacroilitis</td>
</tr>
</tbody>
</table>

Conclusion

- Degenerative and autoimmune inflammatory joint disorders have distinctive clinical and laboratory features
- Detail history is important to support the clinical diagnosis
- Both conditions have underlying complex mechanistic pathogenesis and immunogenetic pathway play an important role
- No curative treatment for both conditions
- Early diagnosis and treatment especially for AIJD may halt the progression of the disease and systemic involvement
- AIJD should be referred to Rheumatologist due to its complexity in diagnosis, laborious and management.
“The pain passes, but the beauty remains.” ~ Pierre-Auguste Renoir (1841 – 1919)