





رَبَّنَا لَا تُزِعْ قُلُوبَنَا بِعَدَ إِذْ هَدَيْتَنَا وَهُبُ لَنَا مِن لَدُنكَ رَحْمَةً إِنَّكَ أَنتَ ٱلْوَهَّابُ ٢

Our Lord! Let not our hearts deviate after You have guided us, and grant us mercy from You. Truly, You are the Bestower.

[Al-Quran 3:8]



# Vision

- To impart evidence based research oriented medical education
- To provide best possible patient care
- To inculcate the values of mutual respect and ethical practice of medicine

#### **Professor Umar Model of Integrated Lecture**







#### RHEUMATOLOGY LECTURE:3





# "Crystal Arthropathy"

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# Learning Objectives

At the end of this session students will be able to learn:

How to diagnose "crystal arthropathy" on the basis of history and examination

Relevant Investigations

Guidelines and recent advances





## Rheumatological Diseases

Joint Diseases (Arthritis)

Soft tissue Rheumatism

Systemic Diseases (Auto-immune/Vasculitis)

Bone Disorders

## Arthritis



Mechanical (Osteoarthritis)

Inflammatory (RA, SPA)

- Infective (Septic, Tuberculous)
- Crystal arthropathy (Gout)



# Core Concept

#### Case Scenario



50-year old gentleman, with no premorbids except HTN (treated with hydrochlorthiazide), presented with complaint of sudden onset, severe pain and swelling in his right toe.





Past history – two similar episodes, lasting for 4-5 days each in last 1 year

Systemic review – unremarkable

### Case Scenario







#### Acute Monoarthritis ??



## Gout – "Disease of Kings"



#### Gout



Urate – End product of Purine metabolism

Hyperuricemia – Above 6.8 mg/dl

Gout – Disease state due to MSU crystal deposition in

tissues

#### Who can have Gout ?



Children – High Renal clearance (3-4mg/dl)

 MEN – Serum uric acid level increases by 1-2mg/dl in males (sustained through out the life)

WOMEN – Protective effect of Estrogen till menopause

### Hyperuricemia causes



Causes of increased uric acid level in blood :

Over production

Underexcretion (more common)

#### Hyperuricemia causes



# **Over production**

 Hereditary defect – Enzymes involved in purine metabolism

Purine rich diet/ High cell turn over



#### Hyperuricemia causes

### Underexcretion

Renal insufficiency



Dehydration, starvation



#### Pathogenesis



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Hyperuricaemia
                 May be asymptomatic
Deposition of monosodium urate crystals in synovial tissue
(contain various Ig's, complement, fibrinogen, fibronectin)
                 Complement activated
        Neutrophils phagocytose & lyse crystals
     Release chemical mediators (e.g. TNF-a; IL-1)
             ACUTE GOUTY ARTHRITIS
          May resolve & become asymptomatic
              (INTERCRITICAL GOUT)
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# Chronic, Tophaceous Gout









#### Investigations



#### Serum uric acid level – NEVER during acute attack

24 hour urinary uric acid level

Aspiration of tophus/joint fluid to look for monosodium urate crystals

## Investigations

**WILEY** 

#### Monosodium urate crystals











#### **Renal Evaluation**



- Renal stones
- Urate nephropathy

# **Management of Gout**





#### Take home message



 Rheumatoid Arthritis is a chronic symmetrical inflammatory polyarthritis – T2T approch is used to prevent joint damage and deformities.

Spondyloarthropathy should be suspected in young patients (less than 45 years old) with history of inflammatory backache for more than 3 months.

#### **Recent Advances**



 JAK-inhibitors are novel oral agents approved for use in Inflammatory arthritis including rheumatoid arthritis and ankylosing spondylitis.

#### References



#### Davidson's textbook of Internal Medicine

#### American College of Rheumatology guidelines for management of Gout



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