''बेटी बचाओ, बेटी पढ़ाओ''

# JAYOTI VIDYAPEETH WOMEN'S UNIVERSITY, JAIPUR

## FACULTY OF HOMOEOPATHIC SCIENCE

### Teaching Methodology

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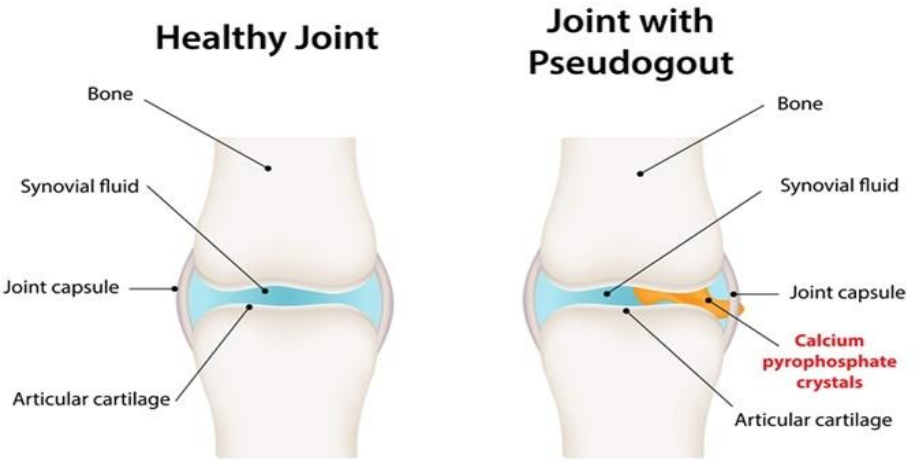
| **Faculty Name** | : | JV'n Dr. Ravi Jain (Asso. Professor & HOD) |
| **Program** | : | BHMS |
| **Course** | : | Practice of Medicine |
| **Session** | : | Pseudogout & Crystal Depostition Disease |

**Academic Day starts with –**

- Greeting with saying **'Namaste'** by joining Hands together following by 2-3 Minutes Happy session, Celebrating birthday of any student of respective class and **National Anthem**

**Lecture Starts with-**

- **Review of previous Session-** In previous session as I had discussed about Gout
- **Topic to be discussed today-**. In todays lecture I will start with Pseudogout & Crystal Deposition Disease.
- **Lesson deliverance (ICT, Diagrams & Live Example)-**
  - PPT (20 Slides)
  - Diagrams




**Picture of changes in Pseudogout**

## Calcium Pyro-Phosphate Dihydrate (CPPD) Deposition Disease (Pseudogout)

- CPPD disease is characterized by acute and chronic inflammatory joint disease, usually affecting older individuals.
- The knee and other large joints are most commonly affected.
- Crystals are thought not to form in synovial fluid but are shed from articular cartilage into joint space, where they are phagocytosed by neutrophils and incite an inflammatory response.
- It is most common in the elderly, occurring in 10–15% of persons age 65–75 years and 30–50% of those >85 years.
- CPPD is most often idiopathic but can be associated with other conditions
- Ageing
- Disease-associated
- Primary hyperparathyroidism
- Hemochromatosis
- Hypophosphatasia
- Hypomagnesemia

- Chronic gout
- Postmeniscectomy
- Epiphyseal dysplasias

**Clinical Manifestations**

- **It can be** :
  - Asymptomatic
  - Acute
  - Subacute
  - Chronic
  - Acute synovitis superimposed on chronically involved joints.
  - Acute CPPD arthritis was termed **pseudogout** because of its striking similarity to gout.
- **Acute CPPD arthritis** (pseudogout) : knee is most frequently involved, **but polyarticular** in two-thirds cases. Other sites wrist, shoulder, ankle, elbow, hands. and temporomandibular joint.
- The involved joint is **erythematous, swollen, warm**, and **painful**.
- Most patients have evidence of **chondrocalcinosis** i.e Calcium deposits in articular cartilage
- **Chronic arthropathy** : progressive degenerative changes in multiple joints; can resemble osteoarthritis (OA).
- Joint distribution sites including knee, wrist, metacarpophalangeal (MCP), hips, and shoulders.
- **Symmetric proliferative synovitis** : seen in familial forms with early onset; clinically similar to RA.
- **Intervertebral disk and ligament calcification** with restriction of spine mobility
- **Spinal stenosis**
- Rarely periarticular **tophus-like nodules**.

- **Precipitating factors**
- Trauma
- Rapid diminution of serum calcium concentration, in severe medical illness or after surgery (especially parathyroidectomy).
- **Associated Symptoms**
- Low-grade fever and, on occasion, temperatures as high as 40°C (104°F).
- The leukocyte count in synovial fluid in acute CPPD can range from several thousand cells to 100,000 cells/μL, the predominant cell being the neutrophil.

**Diagnosis**

- Synovial fluid analysis—demonstration of CPPD crystals, typical rhomboid or rod like crystals (generally weakly positively birefringent or non birefringent with polarized light).
- Radiographs or ultrasound demonstrate punctate and linear radiodense deposits within fibrocartilaginous joint menisci or articular hyaline cartilage, chondrocalcinosis and degenerative changes.
- Secondary causes of CPPD deposition disease in patients <50 years old.

**Differntial Diagnosis**

- OA
- RA
- Gout
- Septic arthritis.

**Treatment**

- NSAIDs
- Intraarticular injection of glucocorticoids.
- Colchicine
- Hydroxychloroquine, or even methotrexate may be helpful

- Progressive destructive large-joint arthropathy may require joint replacement

## Calcium Apatite Deposition Disease

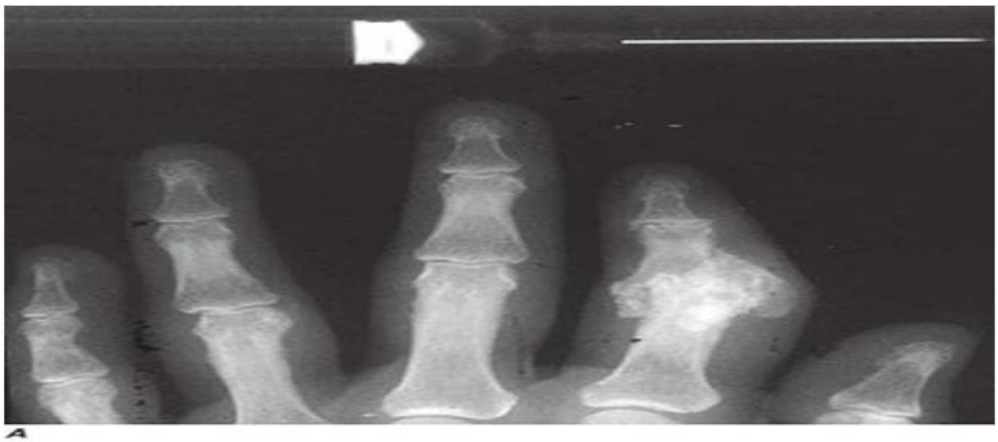
- Apatite is the primary mineral of normal bone and teeth.
- Abnormal accumulation occurs in areas of tissue damage (**dystrophic calcification**), **hypercalcemic** or **hyperparathyroid states** (metastatic calcification), and certain conditions of unknown cause.
- 30–50% of patients with **osteoarthritis** have apatite microcrystals in their synovial fluid.
- Apatite **aggregates** are commonly present in **synovial fluid** in an extremely **destructive chronic arthropathy** of the elderly that occurs most often in the shoulders (**Milwaukee shoulder**), hips, knees, and erosive osteoarthritis of fingers.

## Clinical Manifestation

- Periarticular or articular deposits is associated **with acute reversible inflammatio**n to **chronic damage** to the joint capsule, tendons, bursa, or articular surfaces.
- Joint destruction is associated with **damage to cartilage and supporting structures**, leading to instability and deformity.
- Clinical manifestations include **asymptomatic radiographic abnormalities**, **acute synovitis, bursitis, tendinitis, and chronic destructive arthropathy**.
- Symptoms range from **minimal to severe pain** and **disability** leading to joint replacement surgery.
- There is acute or subacute worsening of joint **pain and swelling.**

## Diagnosis

- The synovial fluid leukocyte count in apatite arthritis is usually low (<2000/μL) despite dramatic symptoms, with predominance of mononuclear cells.
- It depends upon **identification of crystals** from synovial fluid or tissue.
- Individual crystals are **very small** and can be seen only by **electron microscopy** or **x-ray diffraction studies**.
- Radiographic appearance resembles CPPD disease.



**Treatment**

- Treatment of apatite arthritis or periarthritis is nonspecific.
- Acute attacks of bursitis or synovitis is self-limiting, resolving in days to several weeks.
- NSAIDs
- Repeated aspiration,
- Rest of affected joint
- intra or periarticular injection of glucocorticoid.

**University Library Reference-**

- Davidson's Principles and Practice of Medicine – Elsevier Publication, 23rd Edition.
- Golwalla Medicine for students, Jaypee Brothers, 25th Edition
- Harrisons Manual of medicine – MC Graw Hill, 19th Edition
- Harrisons Principles of Internal medicine – 19th Edition, McGraw-Hill Education

**Online Reference**

- https://www.mayoclinic.org/diseases-conditions/pseudogout/symptoms-causes/syc-20376983#:~:text=Pseudogout%20(SOO%2Ddoe%2Dgout,affected%20joint%20is%20the%20knee.
- **https://www.mayoclinic.org/diseases-conditions/pseudogout/diagnosis-treatment/drc-20376988**
- **https://my.clevelandclinic.org/health/diseases/4756-calcium-pyrophosphate-dihydrate-deposition-disease-cppd-or-pseudogout**

- **Suggestions to secure good marks to answer in exam-**

- Define Psedogout. Write the etiology, pathogenesis,clinical features, of the same.

- **Questions to check understanding level of students-**
  - Enumerate various investigations commonly done for the identification of locomotor diseases.

- **Next Topic-**
  - Fibromyalgia its clinical featurs, investigations and management.

**Academic Day ends with-**

National song' Vande Mataram'