

# GOUT

Fb/Nurse Info



# Definition

- Gout is an inflammatory arthritis associated with hyperuricaemia

Fb/Nurse Info





Reprinted from the Clinical Slide Collection on the Rheumatic Diseases, copyright 1991, 1995, 1997. Used by permission of the American College of Rheumatology.





# Epidemiology

- Prevalence of hyperuricaemia 5%
- Prevalence of Gout 0.2%
- M:F ratio 10:1
- Hyperuricaemia is defined as  $>2$  SD from mean  $420 \mu\text{mol}$  in males and  $360 \mu\text{mol/l}$  in females.

Fb/Nurse Info

# Factors associated with High Uric acid

1. Increasing age
2. Obesity
3. High protein diet
4. High alcohol consumption
5. Combined hyperlipidemia
6. Diabetes mellitus
7. Ischaemic heart disease
8. Hypertension

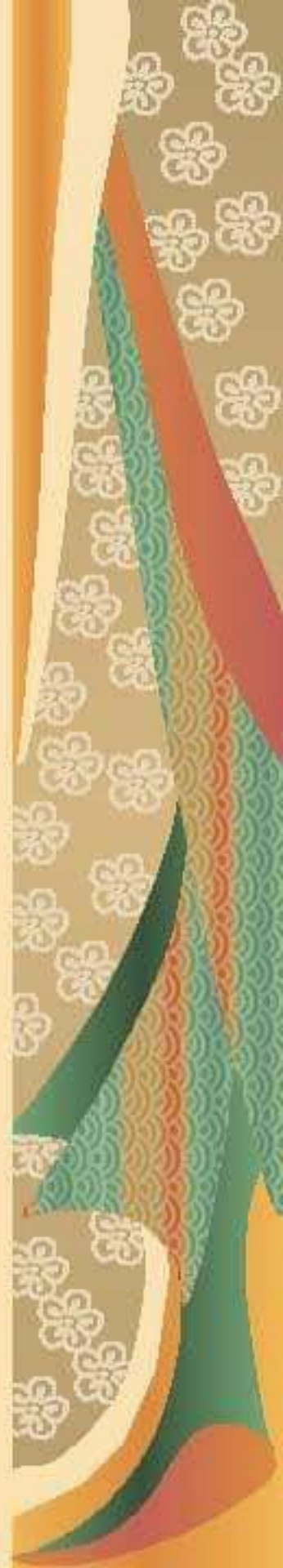




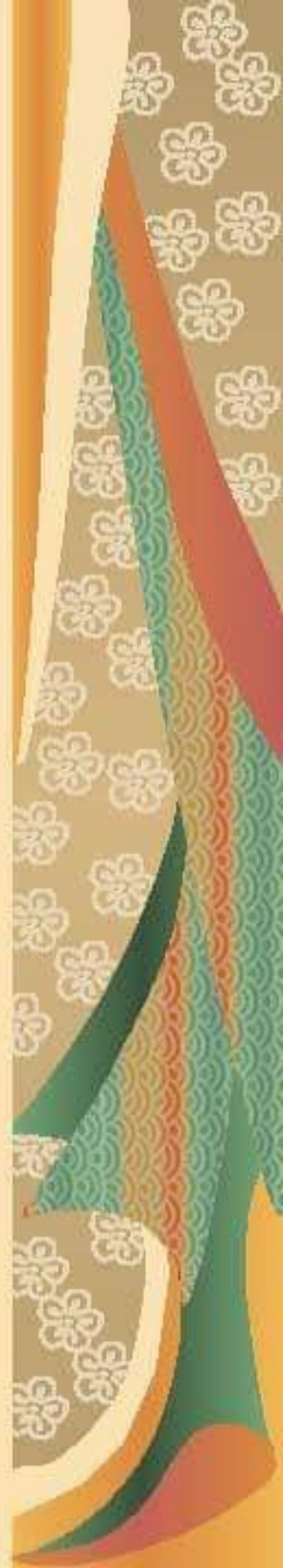


Figure 1. Too much eating and drinking can bring on attacks of gout.



# Causes of hyperuricaemia

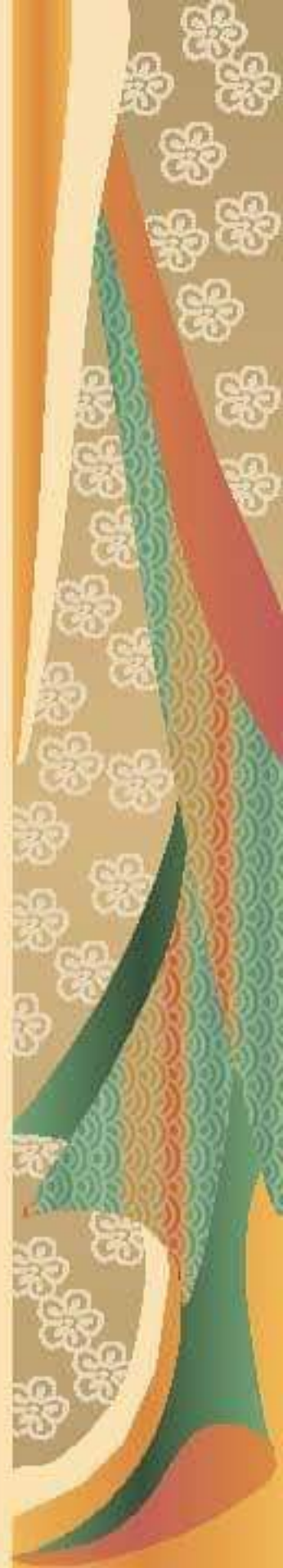
- Impaired excretion of uric acid
- Increased production of uric acid





# Cause of hyperuricaemia

- 90% have decreased excretion
- 10% have increased production
- 1% have in born error of metabolism like HGPRT def or PRPP overactivity

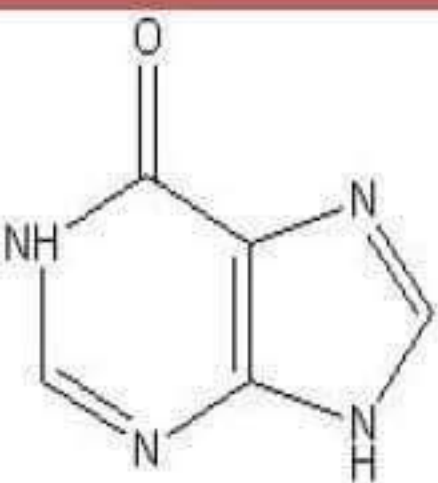




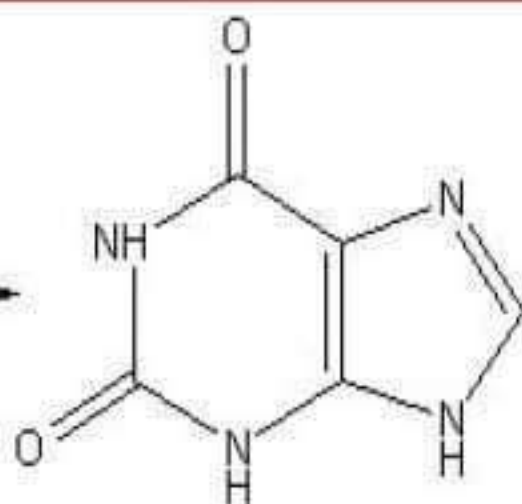
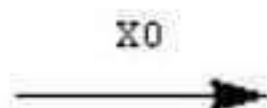
# Uric acid synthesis

- Uric acid is the last step in purine breakdown
- Conversion of hypoxanthine to xanthine and xanthine to Uric acid is catalysed by Xanthine Oxidase

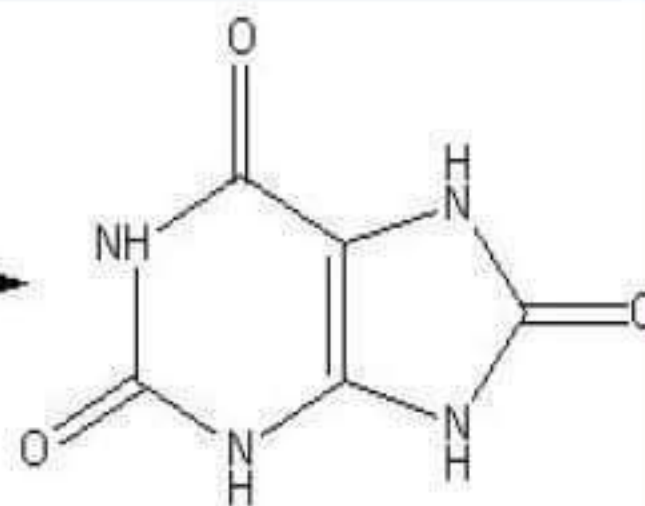
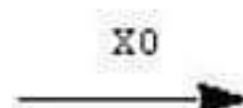




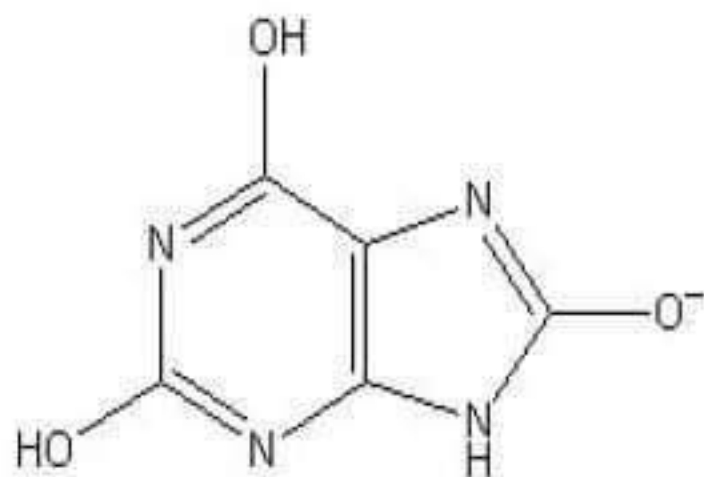
hypoxanthine



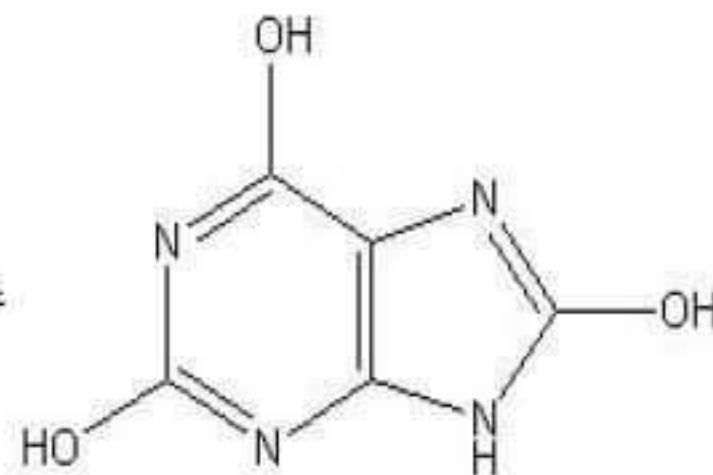
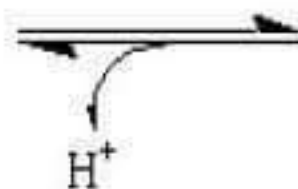
xanthine



uric acid  
(keto form)



urate

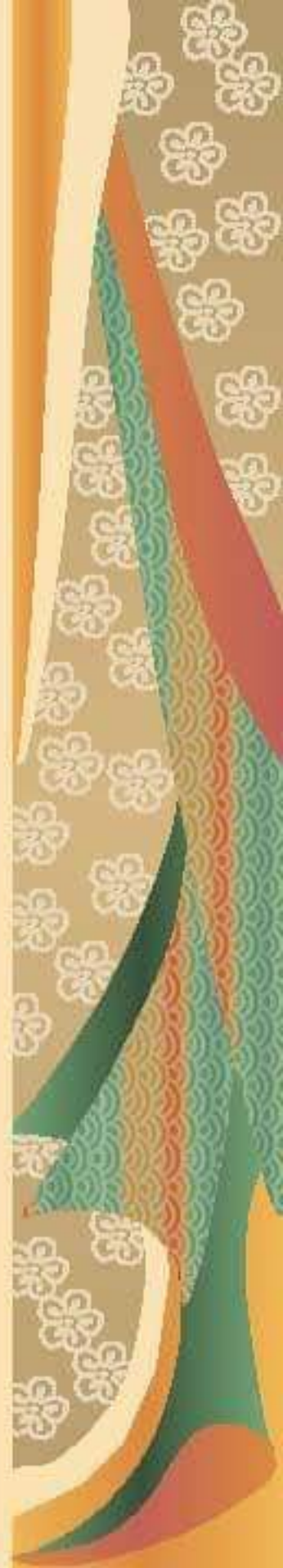


uric acid  
(enol form)



# Uric acid excretion

- UA is completely filtered by glomerulus
- Almost 100% is reabsorbed by proximal tubule
- 50% is re-excreted by distal tubule
- Low dose aspirin blocks secretion
- High dose aspirin blocks reabsorption



# Impaired excretion

- Chronic renal failure
- Drugs: thiazides, low dose aspirin
- Hypertension
- Lead toxicity
- Pr. Hyperparathyroidism
- Hypothyroidism
- ↑lactic acid production: alcohol, exercise, starvation
- G 6 PD deficiency






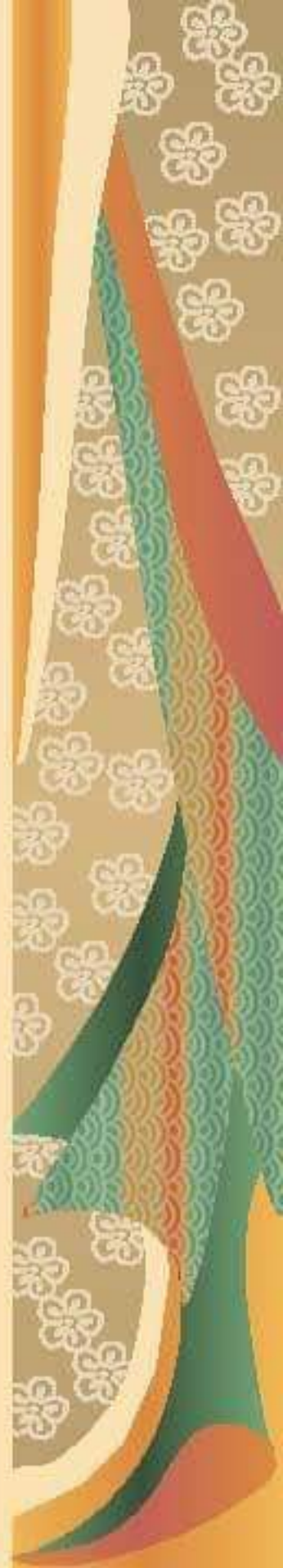
# Increased production

- Lesch Nyhan Syndrome (HGPRT deficiency)
- PRPP overactivity
- G6 PD deficiency
- Increased purine turnover
- Myeloproliferative disorders eg Polycythemia rubra vera
- Lymphoproliferative disorders like leukemia
- Carcinoma esp after chemo, severe psoriasis



# HGPRT

 Hypoxanthine-guanine-phosphoribosyl transferase





# PRPP overactivity

 Phosphoribosyl-pyrophosphate



# CLINICAL FEATURES OF HYPERURICAEMIA

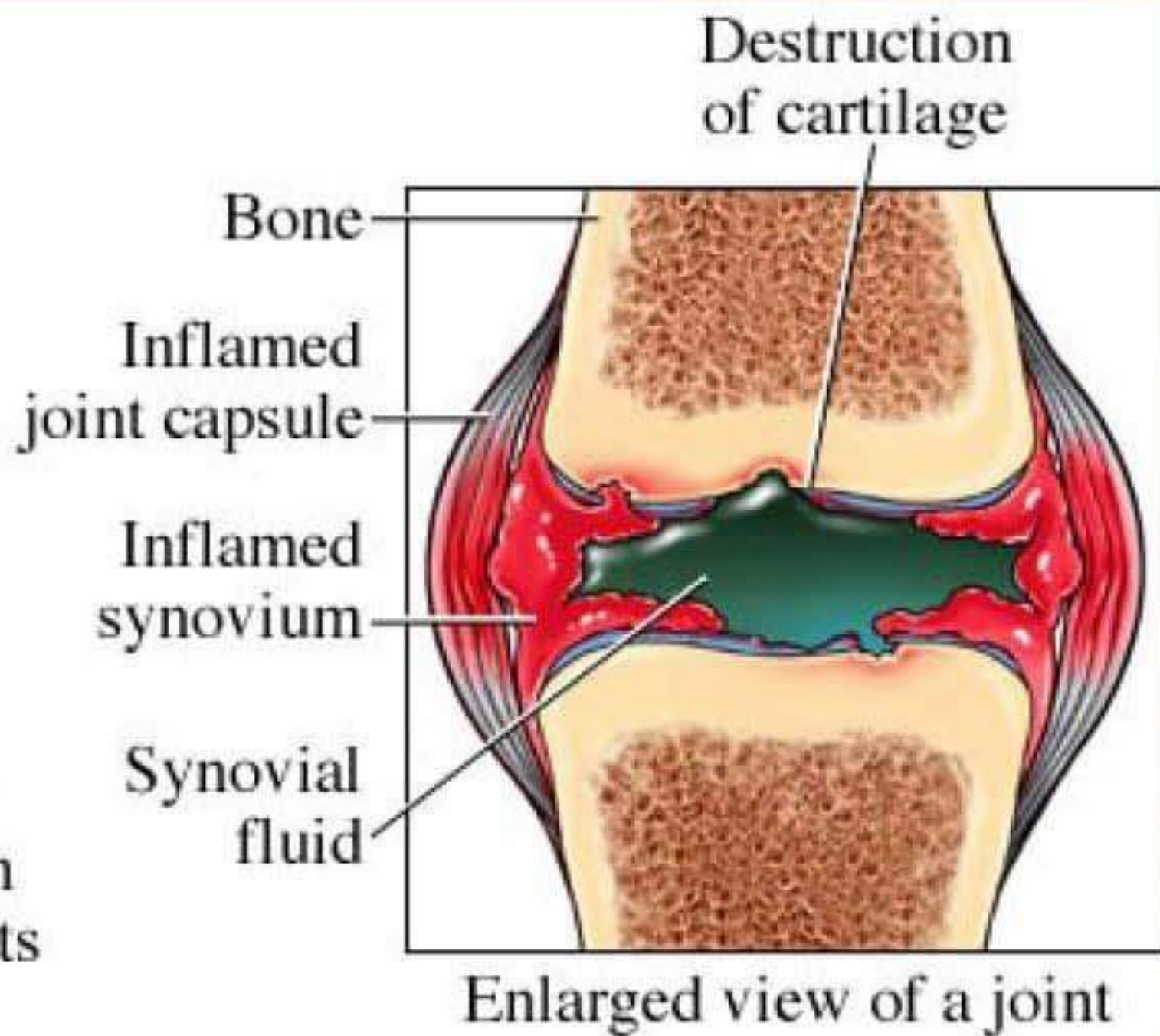
- Acute Urate synovitis-gout
- Chronic polyarticular gout
- Chronic tophaceous gout
- Urate renal stones







Joint pain  
occurring in  
various joints







# Acute Gout

- Sudden onset of severe agonizing pain, swelling of 1<sup>st</sup> MTP joint
- Too painful to touch or move
- Precipitated by food, exercise, alcohol or diuretic
- Usually recovers in 7 days
- Typically associated with desquamation of overlying skin

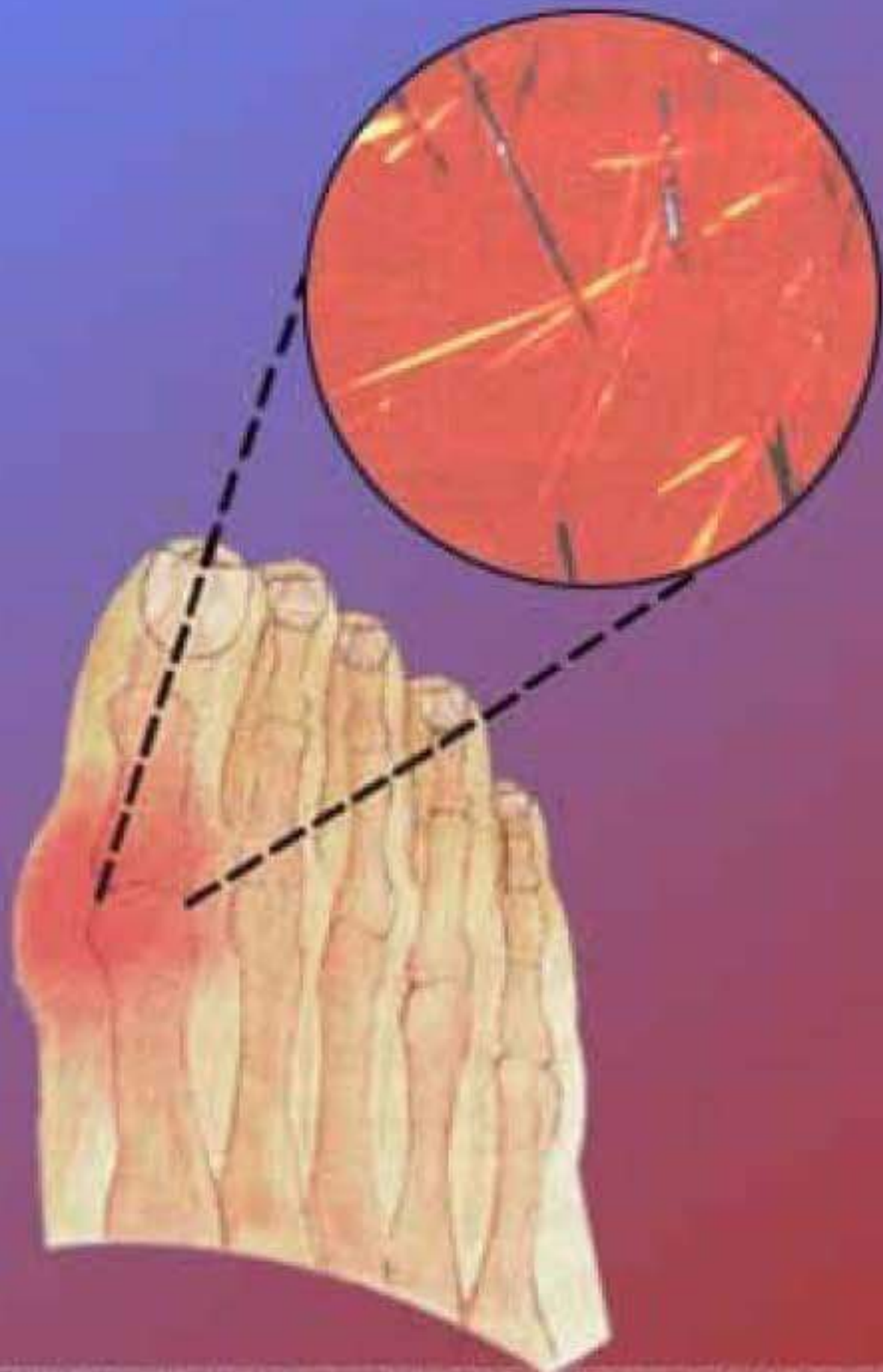


# Investigations

- Joint fluid microscopy
- Specific
- Technically difficult
- Serum Urate usually raised, may fall after an acute attack and creatinine
- Monitor serum ur







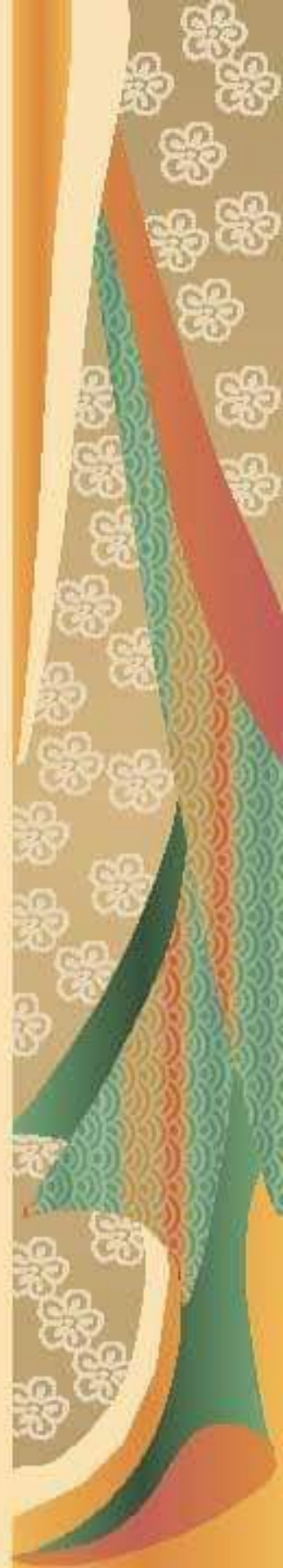
# Treatment

- High Dose NSAIDs
- Rapid response
- Naproxen 750 mg initially then 500mg bid
- Diclofenac 75-100 mg initially then 50 mg bid or tid
- Indomethacin 75 mg initially then 50 mg bid or qid



# Alternative treatments

- Colchicine 1000mg initially then 500mg bid to qid ((DIARRHOEA))
- Corticosteroids ((intramuscular or intra articular))– depot methylpredisolone



# Reduction of Serum Urate

- Dietary advice
- Weight reduction
- Advice on alcohol consumption





# Pharmacological agents

- Decrease Uric acid production  
((ALLOPURINOL))

- Increase Uric acid  
excretion((PROBENECID))

# A word about Allopurinol

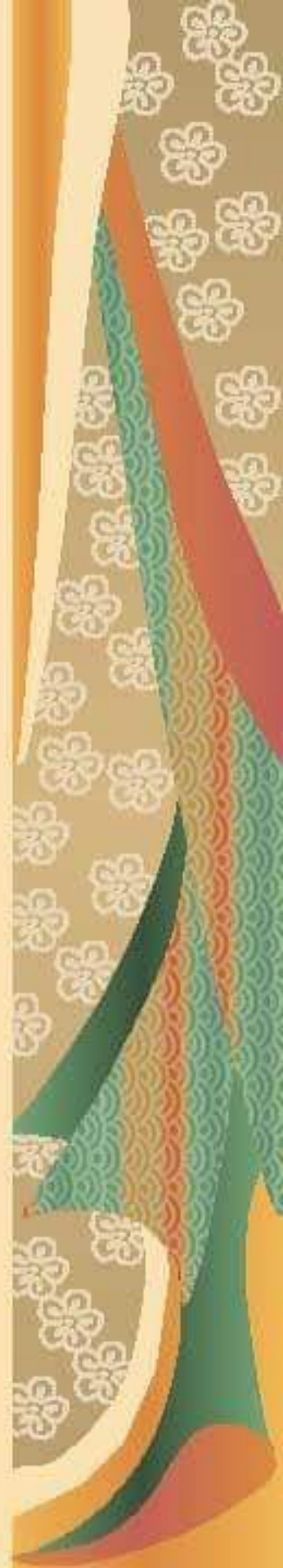
- Relatively safe drug
- Can cause rashes and rarely bone marrow suppression
- Use only in frequent and severe attacks when diet and life style modification has failed to prevent acute attacks
- DO NOT USE within ONE MONTH of acute attack
- Started under cover of NSAIDs





# Chronic polyarticular gout

- Elderly on long term diuretic treatment
- Renal failure
- Allopurinol treatment started soon after acute to gout

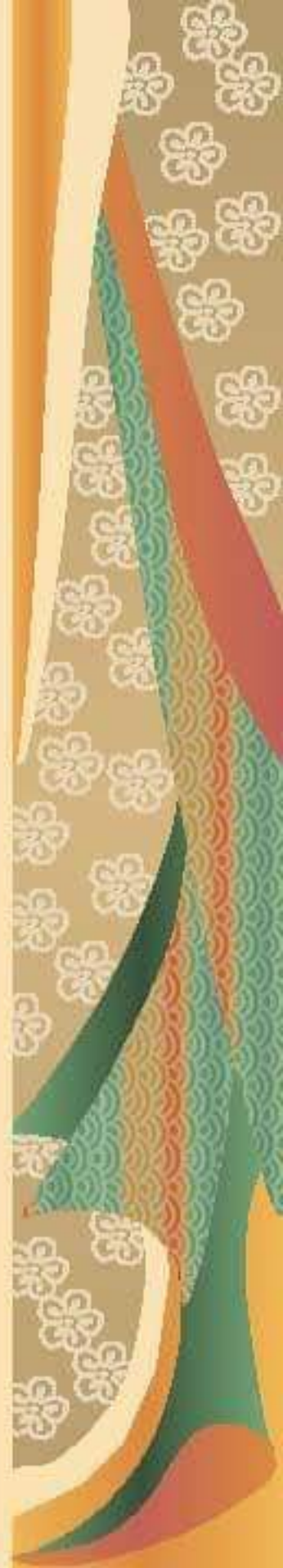






# Chronic tophaceous gout

- Sodium urate forms white smooth deposits in skin and around joints
- Typical sites
- Ear lobes, fingers and Achilles tendon
- Can ulcerate
- Causes bone destruction (punched out) bone cysts on x-rays
- Often accom. by renal impairment













# Pseudogout ((Pyrophosphate arthropathy))

1. Another form of crystal arthropathy
2. Can resemble acute gout
3. Affects elderly women
4. Usually affects knees and wrists
5. Caused by deposition of Calcium pyrophosphate crystals



# Associations of pseudogout

- Haemochromotosis
- Hyperparathyroidism
- Wilson's disease
- alkaptonuria





# Diagnosis

- Chondrocalcinosis on xrays
- Joint aspiration and polarised microscopy to reveal WEAKLY POSITIVE RHOMBOIDAL crystals

