
In the name of
God

50 Years old man with acute arthritis in Right ankle

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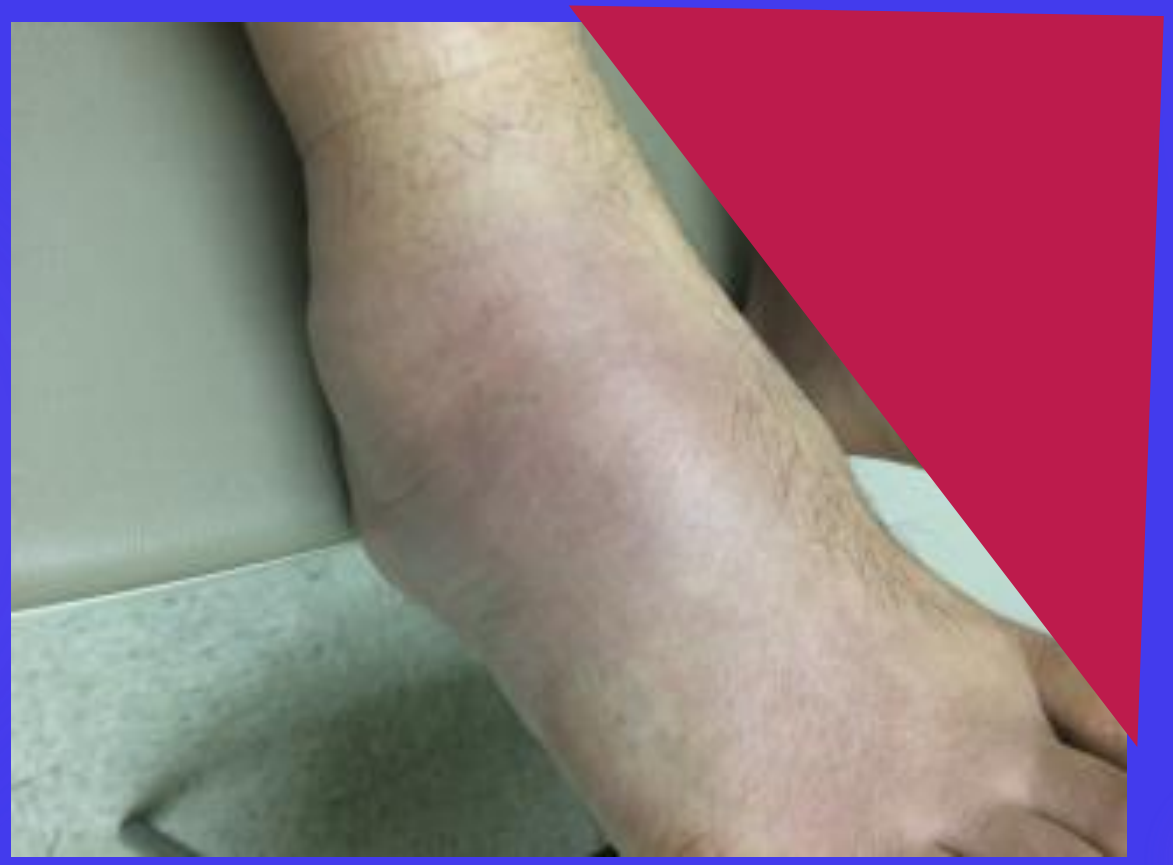
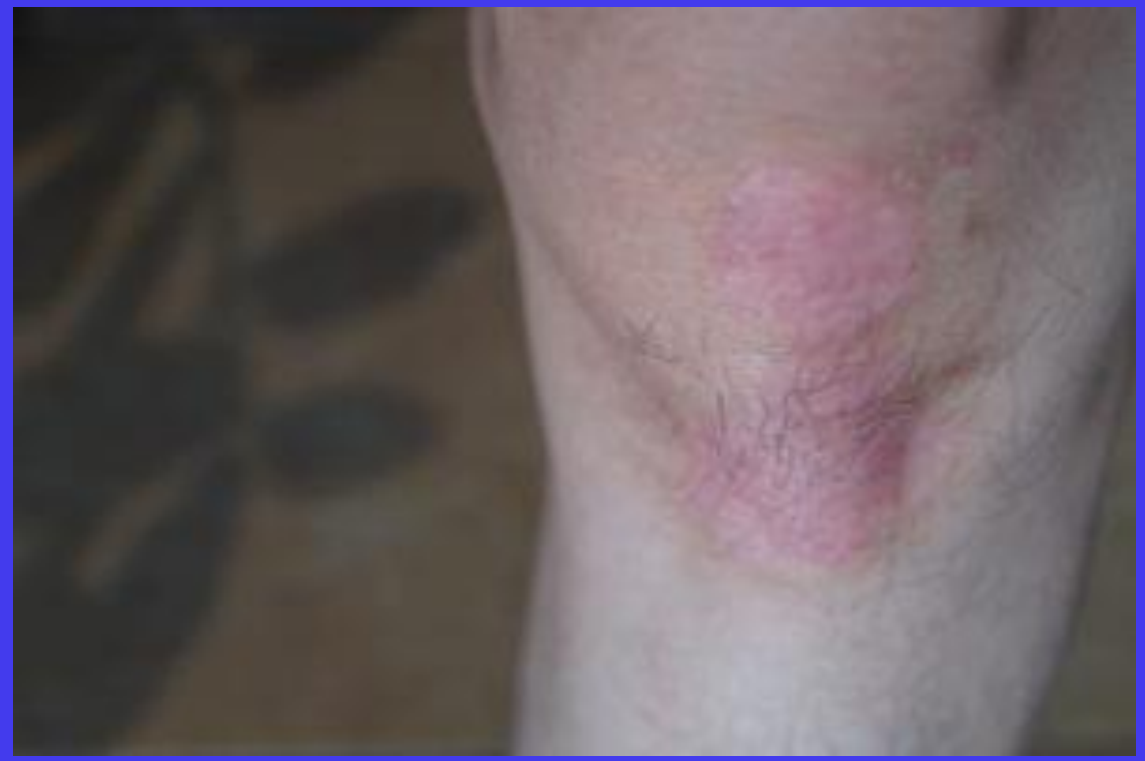
- 50 y old man was wake up from acute severe pain in his right ankle
- Ankle had severe swelling and mild erythema and patient unable to walk

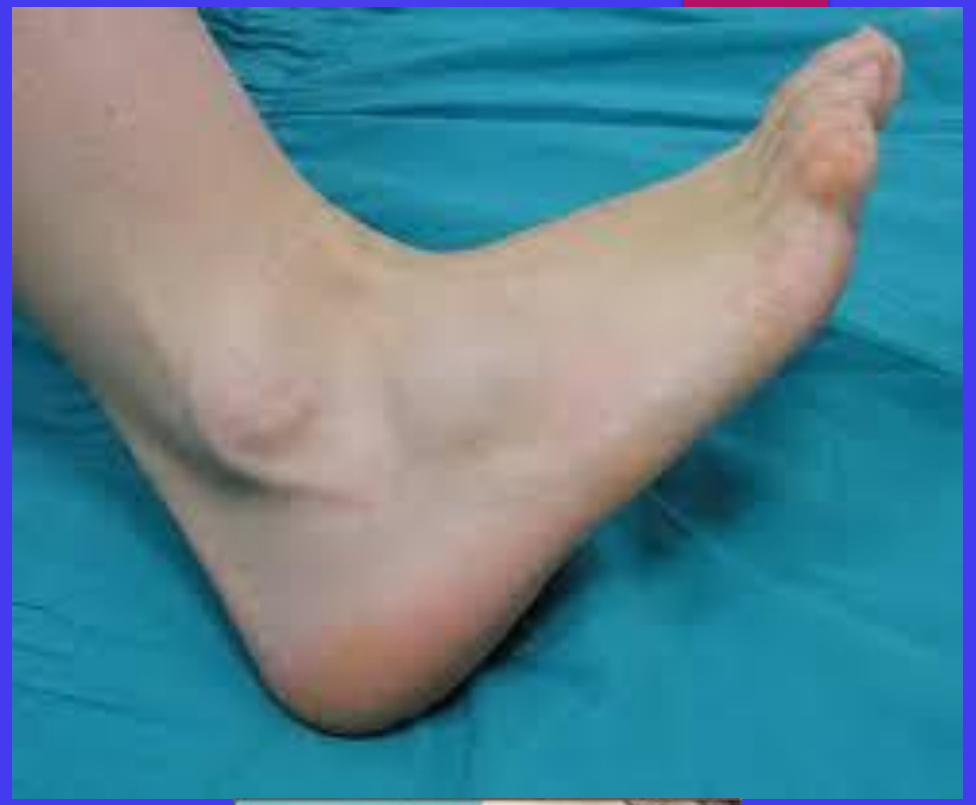


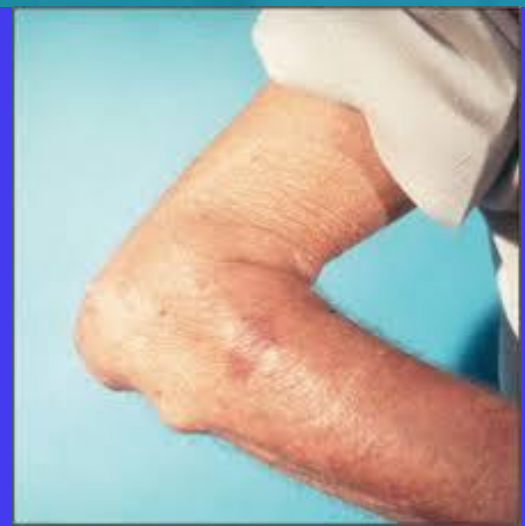
- He also complain from low grade fever
- History of 3 times intermittent arthralgia in instep joint that short lived and better after one day
- Hx recurrent low back and flank pain that better after few days with parenteral analgesic
- history of intermittent erythematous lesion on his knees since 5 years ago that he believed appear after long sitting and stress



- He was in a familial dinner in previous night use unpasteurized yogurt and dispute with one of family members
- He use acetaminophen for pain control 4 times a day and because holidays he don’t go doctor till day after
- On next day pain and swelling and erythema better but minimally persist

- When he come to office on PE patient was obese and only joint physical finding is mild pain and erythema in R ankle with some ROM restriction in all movement with mild desquamation ,mild HTN, no fever
- 3 Sc nodules present in right olecranon
- Lumbar exam ok





Hall mark of this case

- Acute ankle monoarthritis
- Erythema in joint
- Mild fever
- Hx some mild petit joint pain in feet
- Hx LBP and flank pain
- Hx some erythematous skin lesion in knees
- Hx unpasteurized use of dairy products
- Sc nodules
- Better after one day
- Stress in familial dinner

Approach To Arthritis

First step is to determine the problem is :

- Articular
- Periarticular
- Non articular

	Periarticular pain	Articular pain	Neurogenic pain	Referred pain
Enquiry	Only a few selective movements are painful	All joint movements are painful	Dysaesthesic; aggravated by compression of nerve or movement of the spine	Unrelated to movement; 'visceral' timing; poorly localised, may be improved by rubbing
Pain on motion	Active> passive; selected movements	Active~passive; several directions	Normal; if root pain: pain on movement of the affected spine segment	Normal
Range of motion	Active movement may be limited by pain; passive movement: full	May be limited equally for both active and passive movement	Normal	Normal
Resisted active movement	Pain on specific manoeuvres	No effect	No effect	No effect
Local palpation	Tenderness over affected periarticular structure (away from joint line)	Possible tenderness over joint line, crepitus, capsular swelling, effusion, increased heat	Normal	Normal
Neurological examination	Normal	Normal	May be abnormal	Normal
Swelling	**Local**	**All sides**	**None**	**None**

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Monoarthritis

- Most rheumatic disease can present as monoarthritis
- Infection , crystal induced , internal derangement & trauma more important and common

Monoarthritis

Most of monoarthritis are not infective but you must concern about that in every monoarthritis (especially when erythema present)

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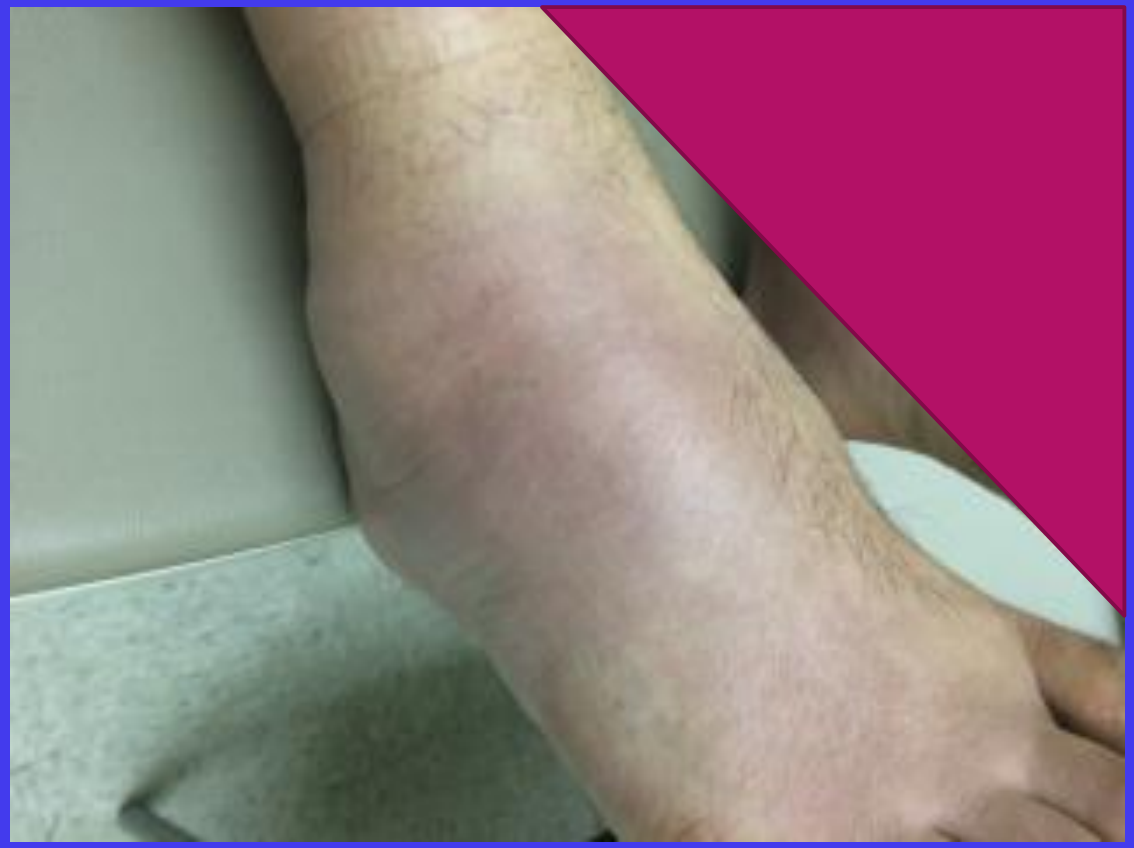
Erythema in joint indicate

- Infection
- Crystal induced
- Viral
- ARF
- Sarcoid
- SLE
- …



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Fever

- Nonspecific symptom
- May be sign of infection but in rheumatic disease due to IL-1,TNF-alfa ,IL-6
- Many rheumatic disease especially ARF, still, Lupus, crystal induced ,RA ,vasculitis…can present with fever

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LBP in this case

- SpA
- Tumor
- Infection
- Unrelated (renal stone,spasm,….)

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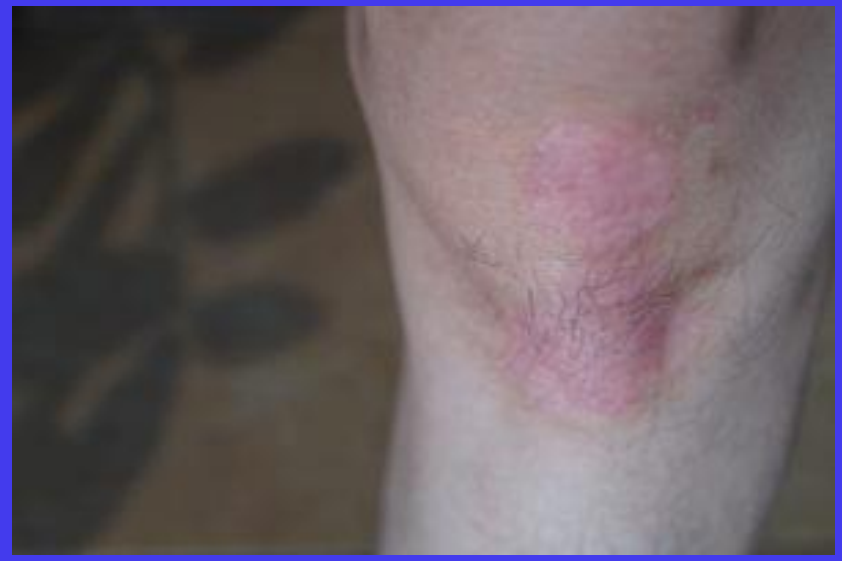
erythematous skin lesion in knees

- Psoriasis
- SCLE
- Eczema
- Sarcoidosis
- Frictional lichenoid dermatitis



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Hx unpasteurized use of dairy products

- **Brucella**
- **Salmonella**
- Campylobacter
- Cryptosporidium
- E. coli
- Listeria

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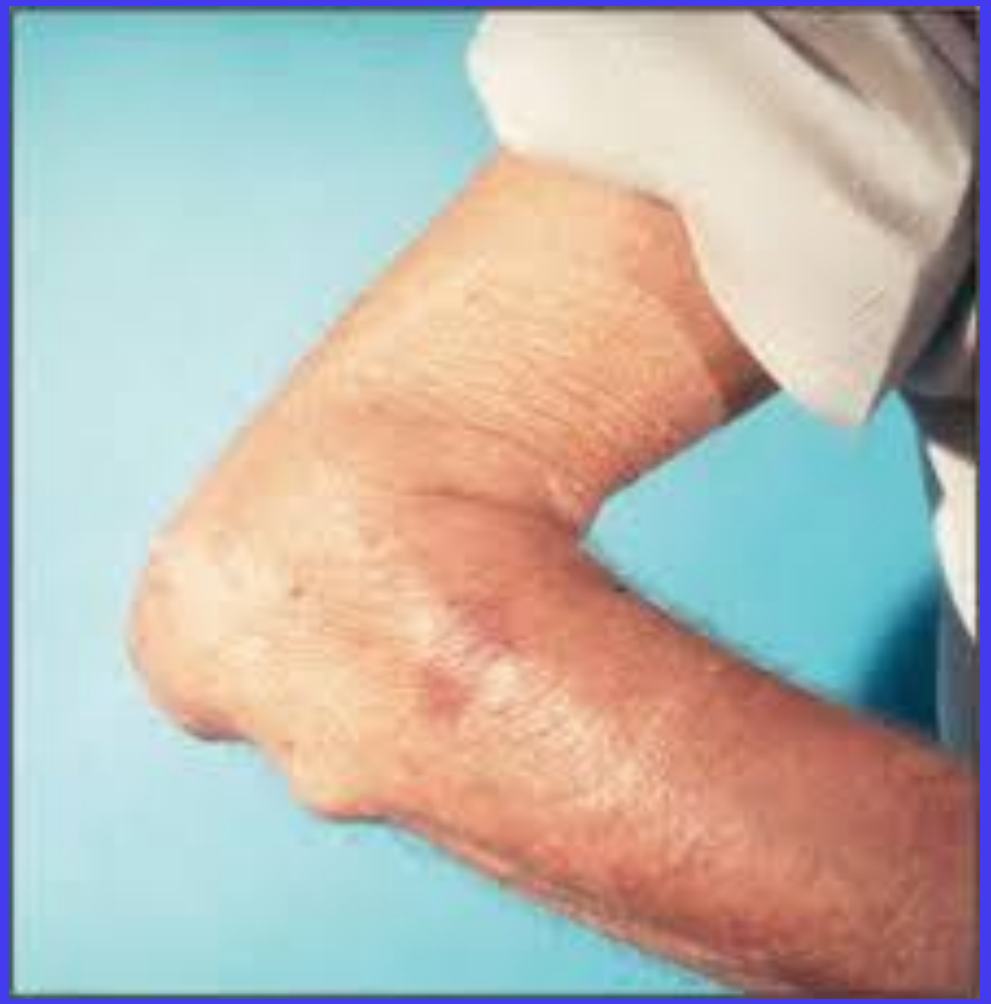
SC nodule with arthritis

- RA (almost always RF+)
- Gout
- SLE
- Vasculitis(EGPA)
- Hyperlipidemia
- RF (almost always carditis)



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Stress Induced Arthritis

- Crystal Induced
- Psoriasis

What is DDx?

- Ankle sprain
- Septic arthritis
- Brucellar arthritis
- Psoriatic arthritis
- Gout
- CPPD
- Lupus
- Viral
- Sarcoidosis
- RA

Ankle sprain

- Cause acute pain and swell and ecchymosis after sprain
- Swelling mostly in one side and 1 or 2 movement painful
- NOT OCCUR IN SLEEP!

Septic arthritis

- Usually present as acute monoarthritis
- **Occur mostly in large joints** (knees ,hip ,shoulder, ankle,elbow)
- *Staphylococcus aureus* is the most common causative organism
- Is a serious condition that requires immediate recognition and treatment.
- **In this patient arthritis resolve mostly after 2 day**

Brucellar arthritis

- Mostly occur in knee (75%) ,hip ,ankle
- Hx unpasteurized dairy product important
- **Associated systemic symptoms** including **fever** and **drenching sweats**, **splenomegaly**

- **Time before unpasteurized dairy use and initiation of symptom very short In this patient arthritis resolved after 2 days that make brucella unlikely**

RA

- Most common form of chronic arthritis
- Present as symmetrical polyarthritis with hand involvement
- Rarely present as mono arthritis which synovial hypertrophy is important clue
- Especially in elderly PMR like common
- Arthritis in RA constant with additive pattern
- Rarely as initial manifestation present as intermittent arthritis (palindromic Rheumatism)
- **Rarely** cause **erythema**

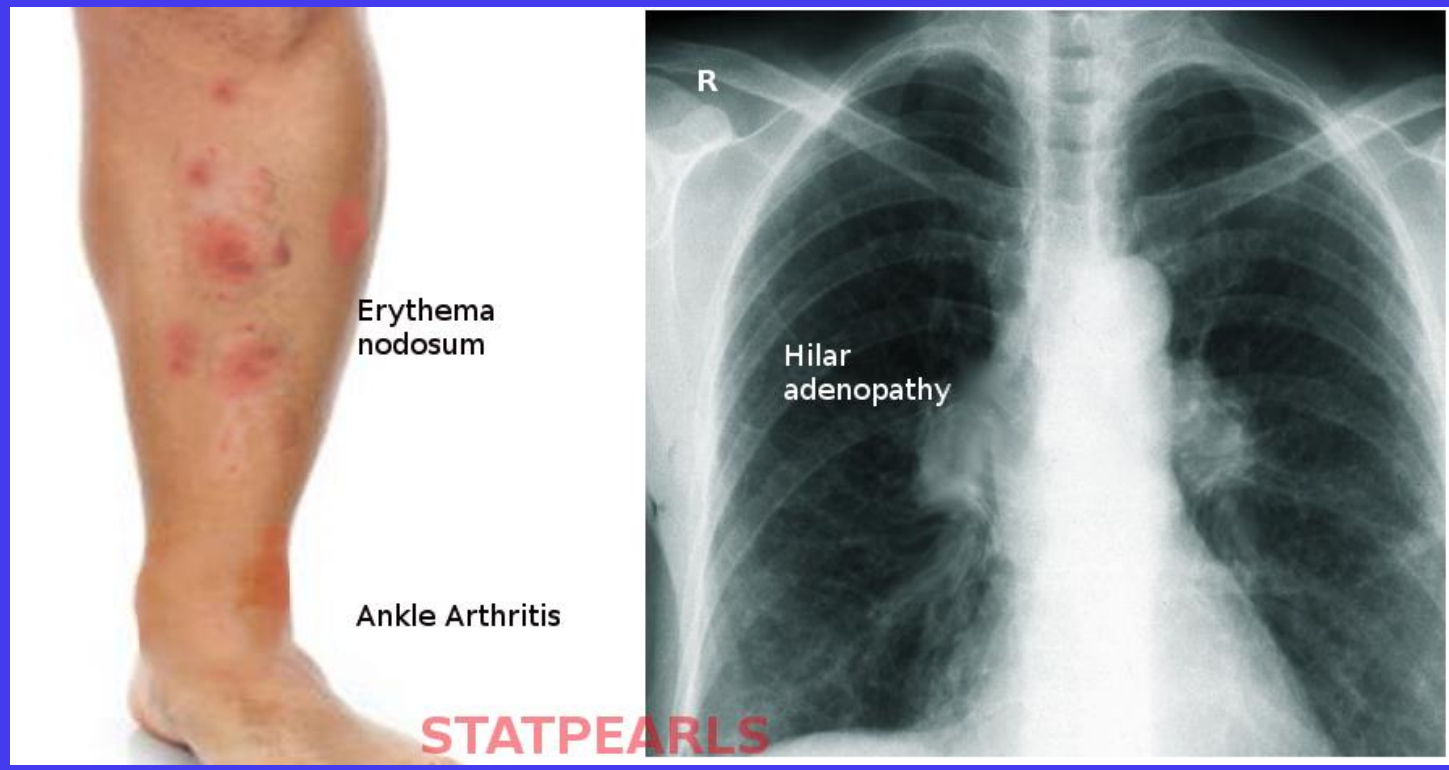
Monoarthritis ,erythema and spontaneous resolution make RA unlikely

Sarcoidosis

- 2 type of arthritis :
- Chronic : usually monoarticular
- Acute : oligo or polyarthritis with EN
- **Symmetrical** ankle arthritis is the most powerful diagnostic feature, and you must always consider sarcoidosis
- Associated EN increase specificity

- **Unilateral involvement ,NO EN, spontaneous resolution make it unlikely**

Lofgren syndrome



Viral

- **1% of all cases** of acute arthritis are thought to have a viral etiology
- Any type of arthritis (migratory, additive, symmetric or asymmetric) but mostly **polyarthritis**
- Most viral arthritis related to hepatitis, parvovirus ,rubella
- The presence of rash, fever, malaise or myalgia and LAP may provide clues to the underlying diagnosis.
- RF can be elevated in around 25% of hepatitis cases

Lupus

- Arthritis and arthralgias have been noted in up to 95 percent of patients
- Involve the small joints of the hands, wrists, and knees(polyarthritis)
- May be asymmetrical, with pain that is disproportionate to swelling and sometimes erythema and associated with lymphopenia and thrombocytopenia
- Generally considered to be nonerosive but deformity (jaccoud ‘s arthropathy) sometimes present
- Sometimes patients have SC nodules

Monoarthritis in lupus rare and mean infection ,AVN

CPPD

- Is great mimicker: pseudo gout, pseudo RA ,Pseudo OA …
- Pseudogout is characterized by acute arthritis (red and warm) usually in one joint in elderly
- It may be precipitated by an injury, severe illness, or major surgery, arthroscopy, intra-articular hyaluronan injection, or by the use of bisphosphonates.
- **The knee is most commonly** affected followed by the wrist, shoulder, ankle, and elbow
- Fever is not uncommon
- Acute CPPD arthritis usually resolves spontaneously in one or two weeks and leaves no residual swelling or deformity.
- **CPPD is important DDx in this patient but Sc nodules ,hx petit attack LBP is unlikely**

Psoriatic arthritis

- Has very powerful familial penetration
- There are significant metabolic comorbidities and increased cardiovascular morbidity and mortality also hyperuricemia more common in PS
- Aggravate with trauma and stress
- can present with arthritis, enthesitis, dactylitis,and axial involvement
- Arthritis can be asymmetrical or RA like ,DIP involvement
- **Can present as intermittent arthritis but monoarthritis is not usual and duration of attacks longer**

Gout

- A sudden monoarthritis of rapid onset, with intense pain, mostly affecting the big toe (Podagra) (initial joint manifestation in 50% of gout cases and eventually involved in 90%)
- Mid -foot, ankle, knee, wrist, finger, and elbow
- periarticular structures, including bursae and tendons

- Polyarticular acute flares (20%) are not rare especially in women and late course of gout after multiple attacks ,and in myeloproliferative disorders and transplant patients

Gout

- In gout, attacks that begin abruptly and typically reach maximum intensity within 8-12 hours; Untreated attacks may last seven to 10 days **resolve spontaneously** symptom patterns that change over time

Gout

- Acute gouty arthritis attacks may occur without provocation, or they may be precipitated by a number of conditions that change uric acid levels
- Any abrupt change in the serum UA concentration may provoke an acute attack of gouty arthritis : persons who are fasting, consume binge amounts of alcohol or ingest large amounts of purine-rich foods (e.g., bacon, salmon, sweetbreads, scallops, turkey).

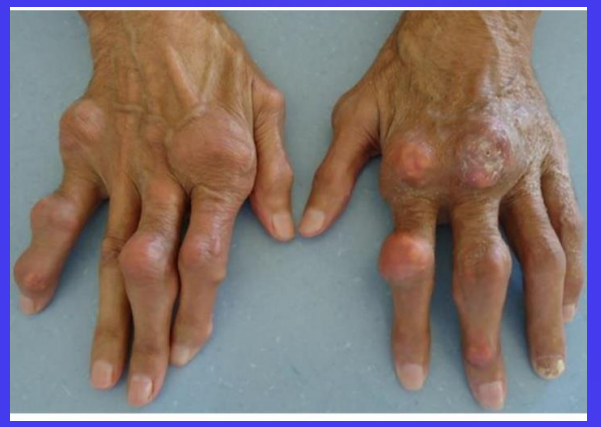
- Modifiable risk factors for gout attacks include alcohol consumption, obesity, hypertension and occupational and environmental exposure to lead, drugs (allopurinol)

Gout

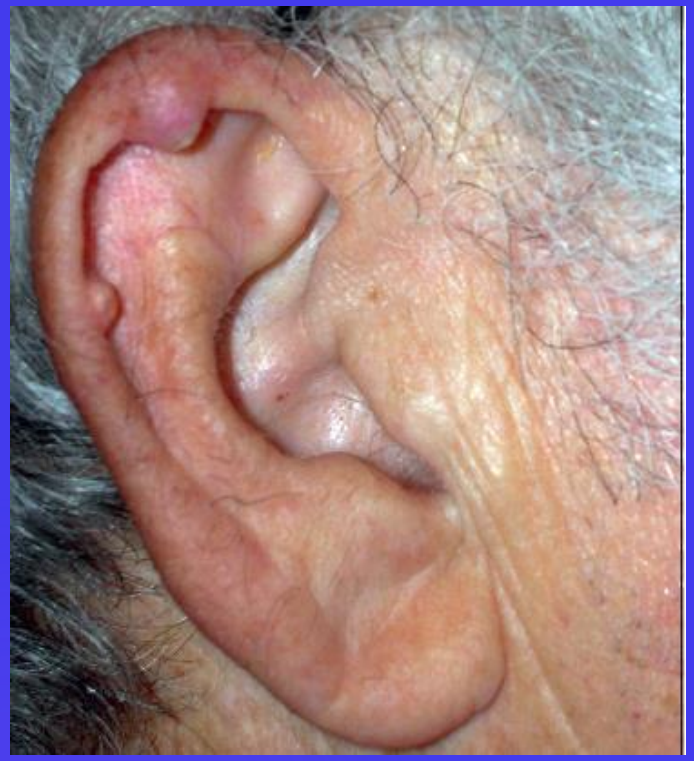
The joints in the great toe and other parts of the lower extremity are generally the first articulations to be affected

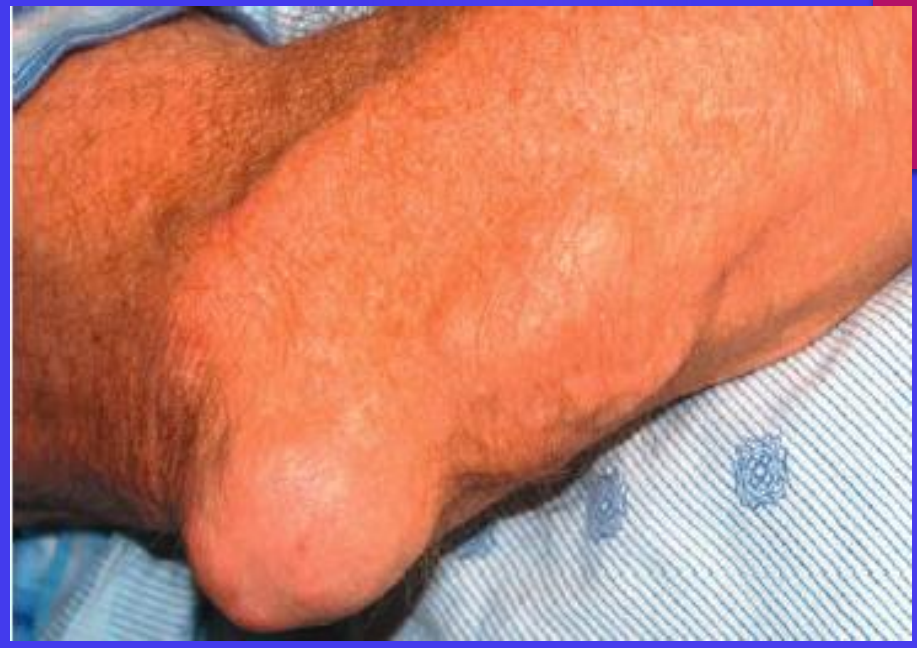
- Lower body temperature and decreased monosodium urate solubility.
- Lower extremity trauma can also lead to an attack.
- routine activities causes synovial effusions during daytime hours. At night, water is reabsorbed from the joint spaces, leaving a supersaturated concentration of MSU. So Attacks usually start during the night

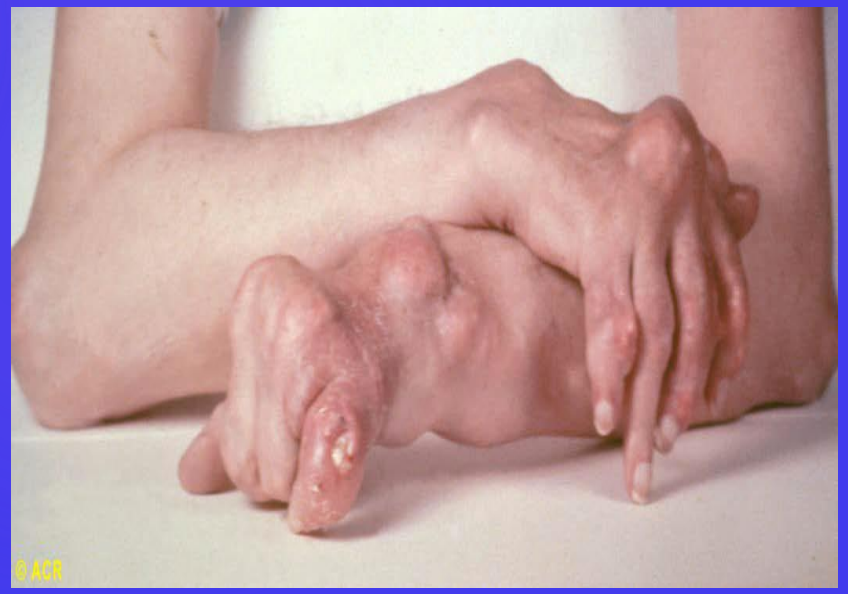
Atypical gout



- Tophi occur after joint symptoms but in tumor lysis, renal failure ,enzyme deficiency and patient on low dose prednisolone for other reasons tophi can be initial presentation
- Polyarticular gout can occur in late phase chronic arthritis but can occur early in women and elderly



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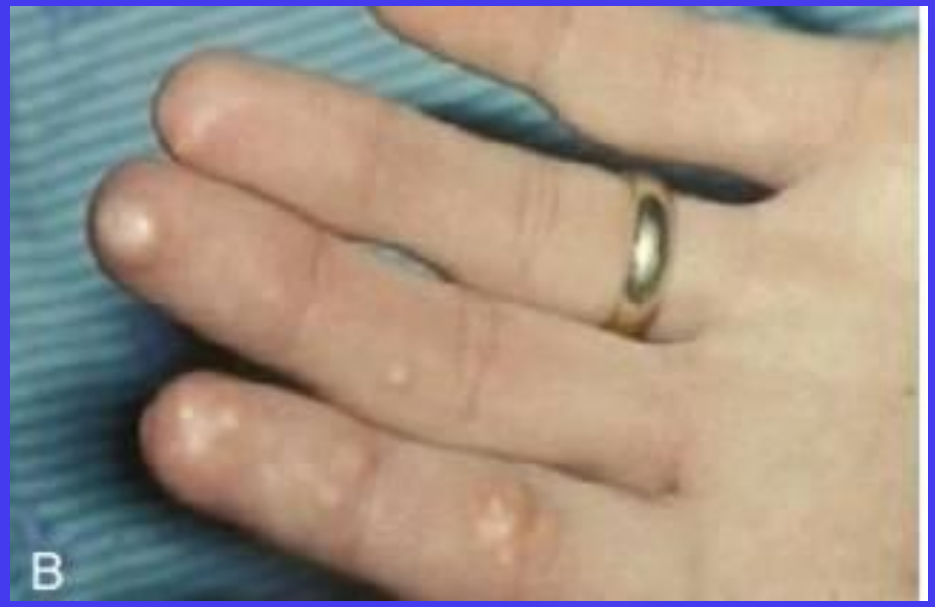
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RENAL MANIFESTATIONS

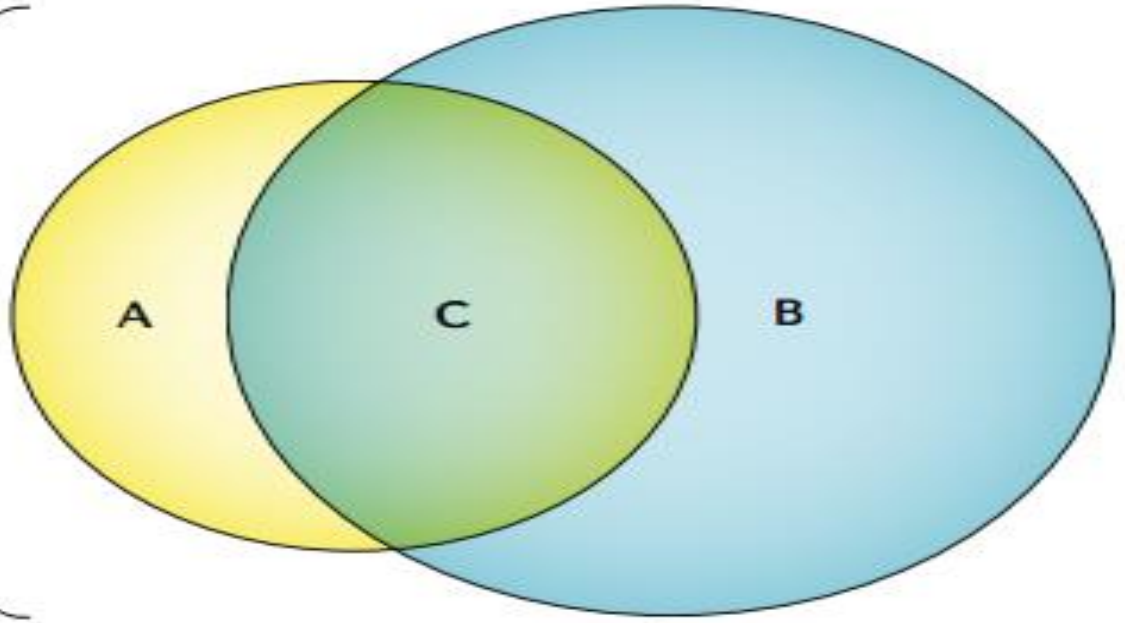
- Nephrolithiasis : 10 to 25 percent of patients with primary gout.
- AKI: Acute gouty nephropathy usually results from the massive malignant cell turnover that occurs with the treatment of myeloproliferative or lymphoproliferative disorders.
- CKD: Long-term deposition of crystals in the renal parenchyma can cause chronic urate nephropathy. The formation of microtophi causes a giant cell inflammatory reaction. This results in proteinuria and inability of the kidney to concentrate urine.

Traditional classification

A Overproduction type
- High cell turnover disorders
- Purine-rich diet
- Lesch–Nyhan syndrome, etc.

B Renal underexcretion type
- CKD
- Metabolic syndrome
- Diuretic use
- Renal urate transporter gene variants, etc.

C Combined type (overproduction and renal underexcretion)



New classification

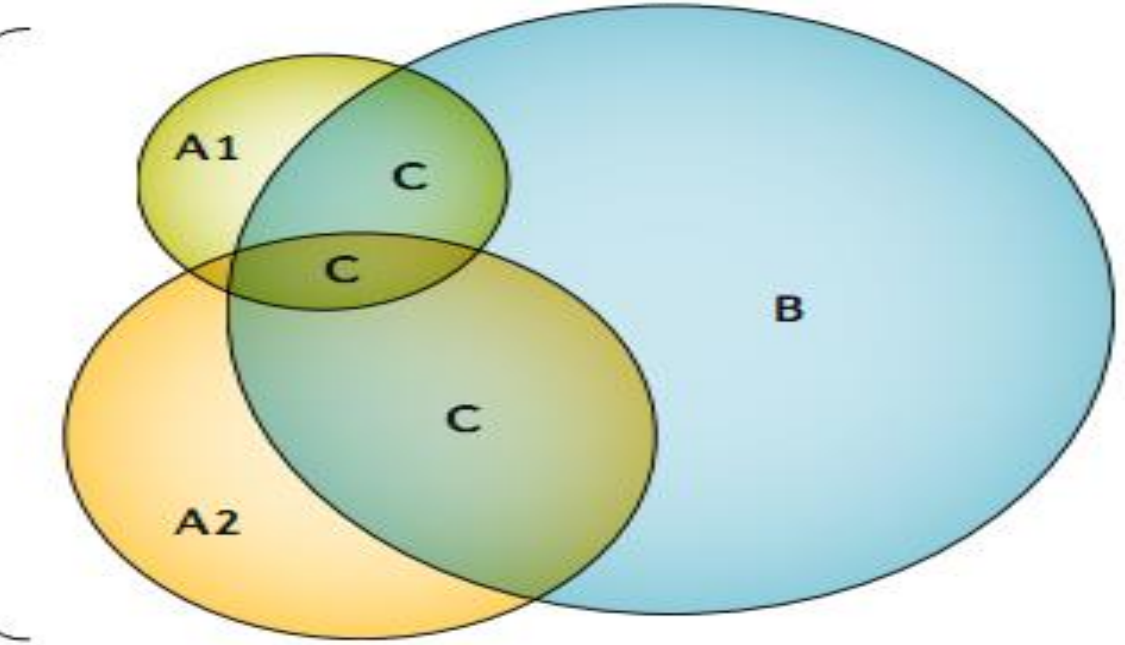
A Renal overload type

A1 Overproduction type

A2 Extra-renal underexcretion type
- ABCG2 dysfunction in the gut
- Intestinal diseases, etc.

B Renal underexcretion type

C Combined type (renal overload and renal underexcretion)



Blood tests in gout

- Neutrophilic leukocytosis
- ESR , CRP elevated
- Elevated uric acid (note uric acid level different in men and pre and post menopausal women and children
- Serum urate may be low during attack (12-42%) esp postsurgical or early months of uric lowering therapy
- Most accurate time for UA level : 2 weeks after resolution attack

Synovial fluid analysis

- presence of intracellular monosodium urate crystals in synovial fluid or tophi (gold standard)
- polarized light microscopy : needle-shaped and negatively birefringent
- Occasionally, patients with gout may present without uric acid crystals in the synovial fluid aspirate. However, aspiration repeated five hours to one day later shows crystals in the synovial fluid of most of these patients.

Synovial fluid analysis

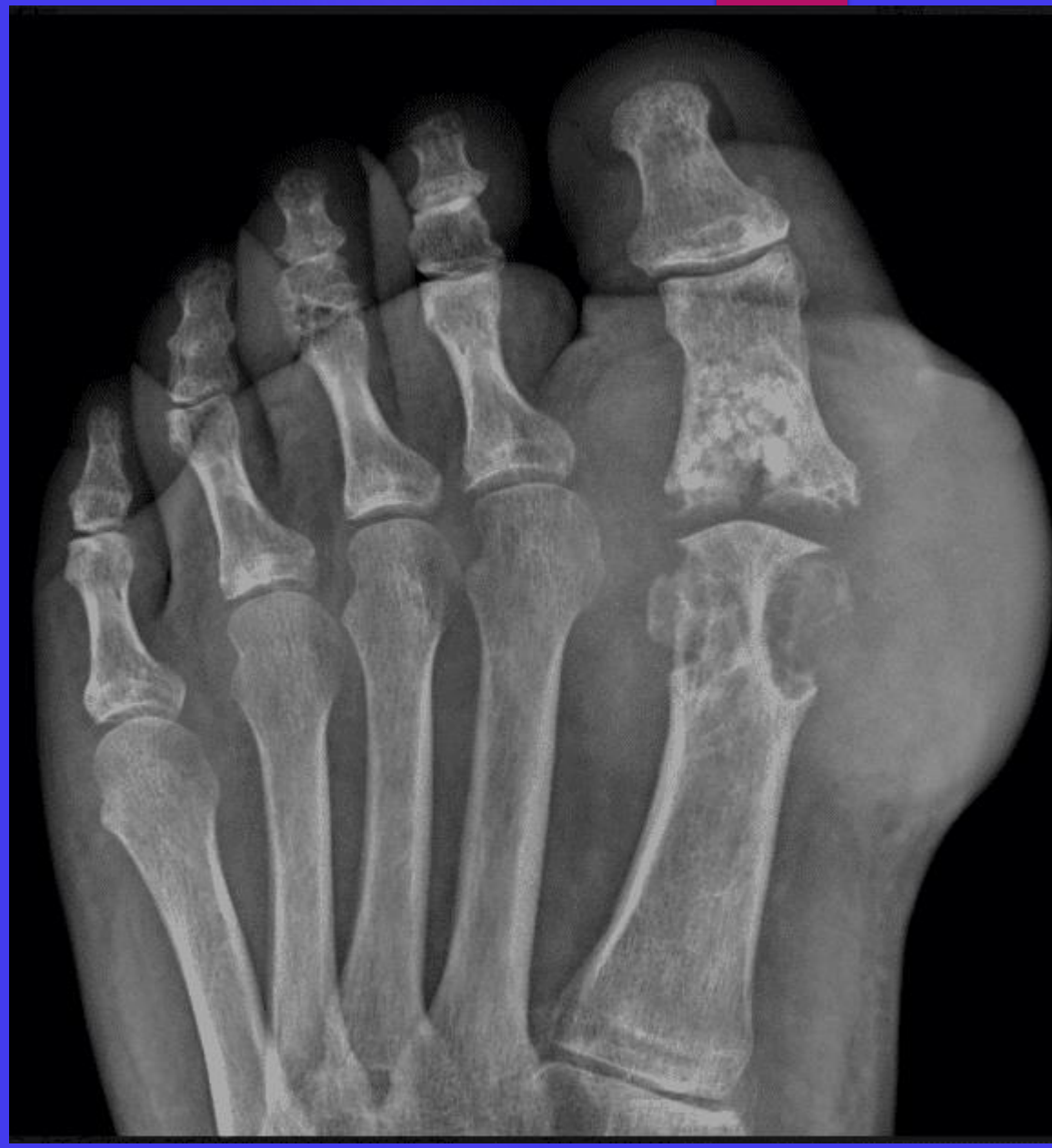
- Fluid has yellowish tint
- Low viscosity
- WBC 10000 to 100000
- Neutrophil predominant (90%)

Imaging for diagnosis and assessment gout

- Plain radiography
- Ultrasonography
- DECT

Plain Radiography

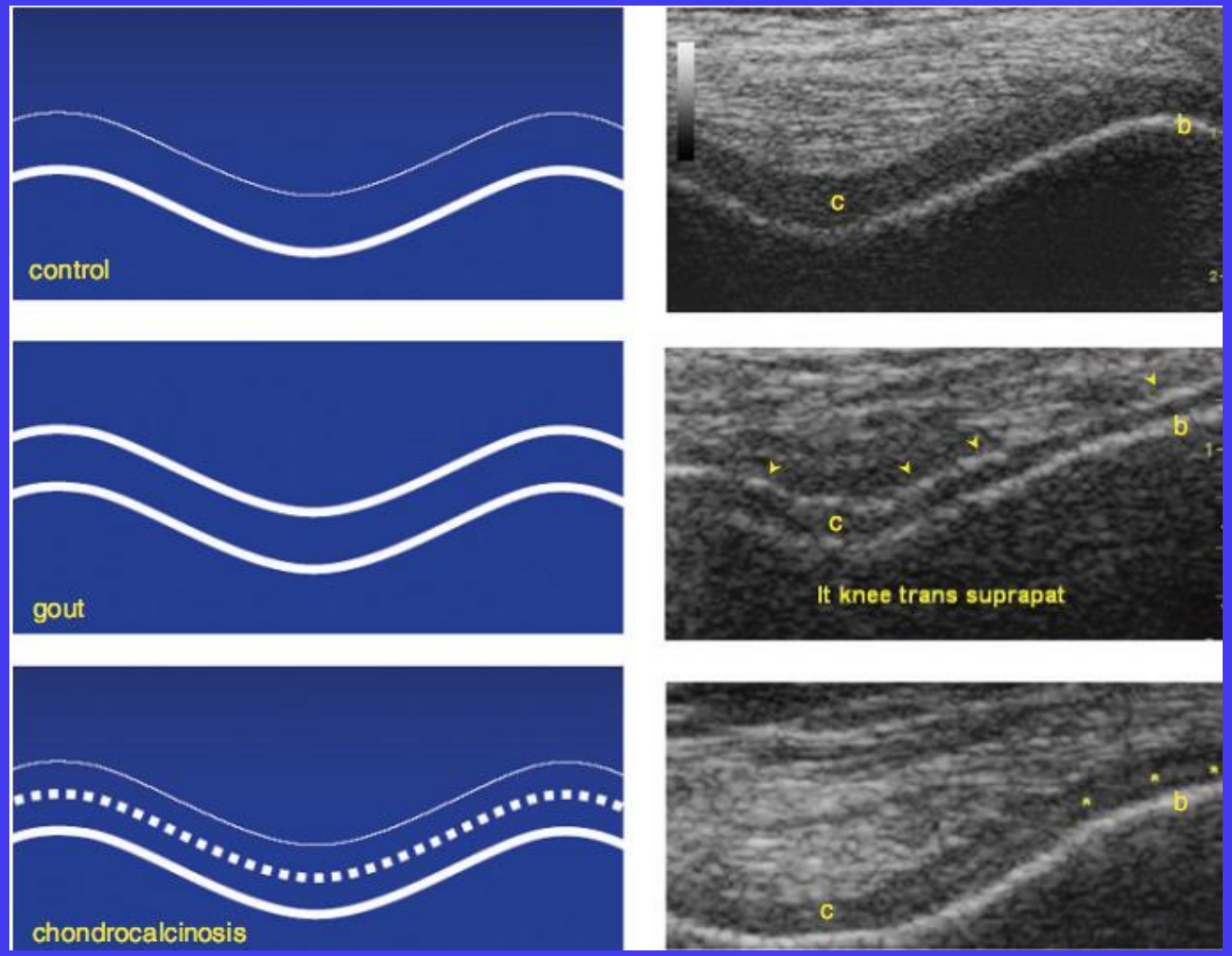
- Asymmetric distribution among the joints, with a strong predilection for distal joints, especially in the lower extremities
- Maintenance of the joint space
- Absence of peri-articular osteopenia
- Asymmetrical soft tissue swelling
- Erosion with Sclerotic borders (punched-out)



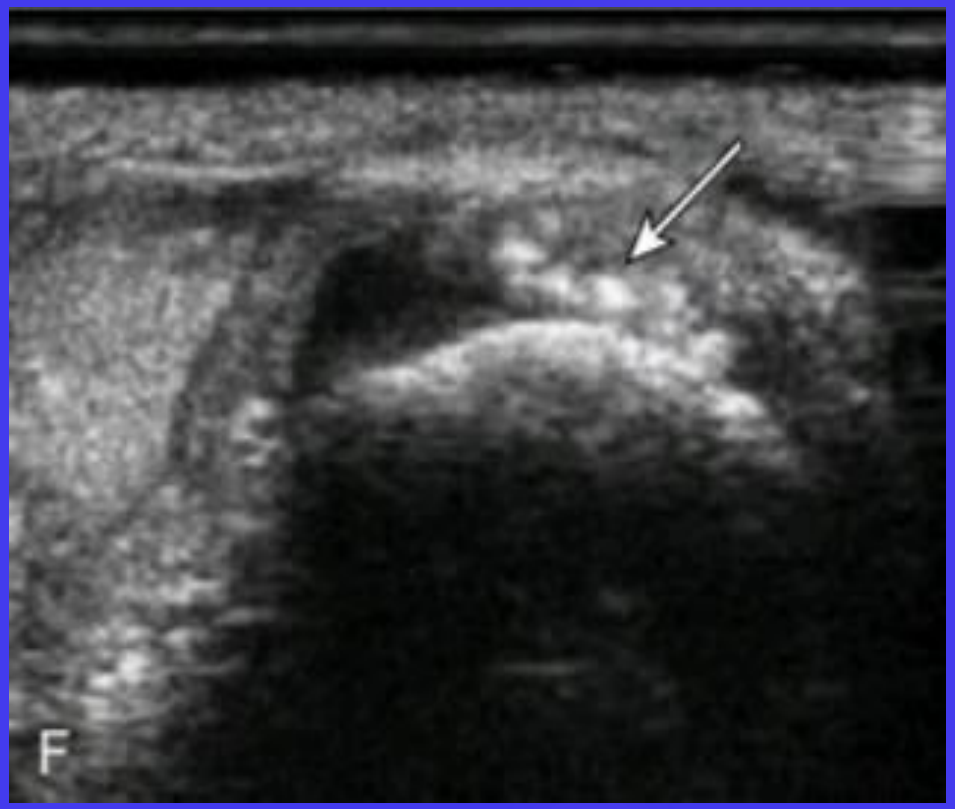
Ultrasonographic findings in established gout include the following:

- A "**double-contour**" sign, consisting of a hyperechoic, irregular line of MSU crystals on the surface of articular cartilage

- new classification criteria for gout

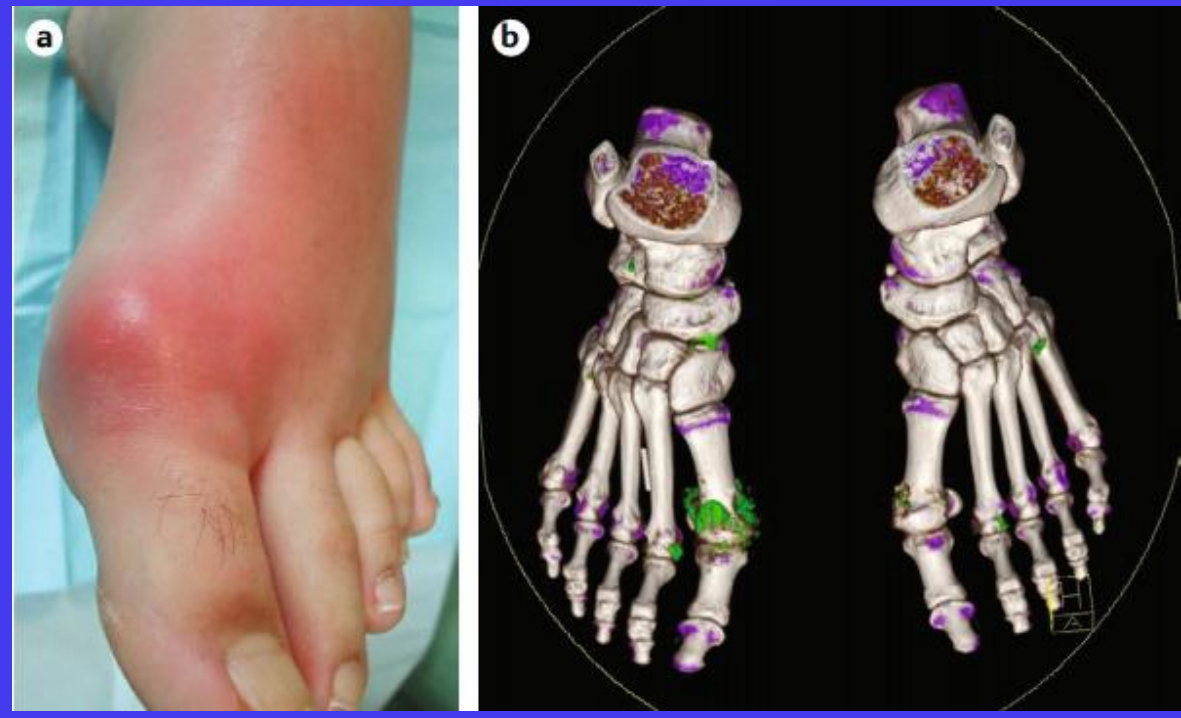


- Tophus
- A circumscribed, inhomogeneous hyperechoic and/or hypoechoic aggregation



Dual- energy CT(DECT)

- DECT enables color coding of urate attenuation by analysing differences in materials exposed to two different X- ray spectra simultaneously



Treatment ACUTE GOUTY ARTHRITIS

- Glucocorticoid : **Oral Prednisolone** 30-50 mg in 2 divided dose
- Intraarticular(triamcinolone 20-40 mg or methylprednisolone 25-50 mg),IM
- In patient with risk of infection ,DM, postoperative NSAID or low dose colchicine preferred
- **NSAID** good choice in younger(<60 y) without CVD and GI disease
- **COLCHICINE** good alternative especially in first 24h

  Low- dose colchicine (1.2 mg followed by 0.6 mg after 1 h ,in iran two1mg in 1h)

  In severe flare and previous history of poor response to single therapy combination therapy recommended
- Canakinumab is also an effective therapy for gout flares but expensive

Indication urate lowering agents

- **Tophi**
- **Renal stone**
- **Gout with GFR<60**
- **Frequent attack 2 or more per year**

After the first gout flare, particularly if they have very high serum urate levels(>8) , early age of onset (<40 years of age) or other comorbidities(CVD)

PREVENTION OF RECURRENT ATTACKS

- Treatment initiated at least 2w after attack 
- Allopurinol and febuxostat : first-line medications for the prevention of recurrent gout
- probenecid : cannot tolerate first-line agents , first-line agents are ineffective.
- Concurrently with NSAID, colchicine, or low-dose corticosteroids
- Treatment should continue for at least three months after uric acid levels fall below the target goal in those without tophi, and for six months in those with a history of tophi

PREVENTION OF RECURRENT ATTACKS

- Dosing is guided by the target serum uric acid level. In patients without tophi <6 and tophi < 5

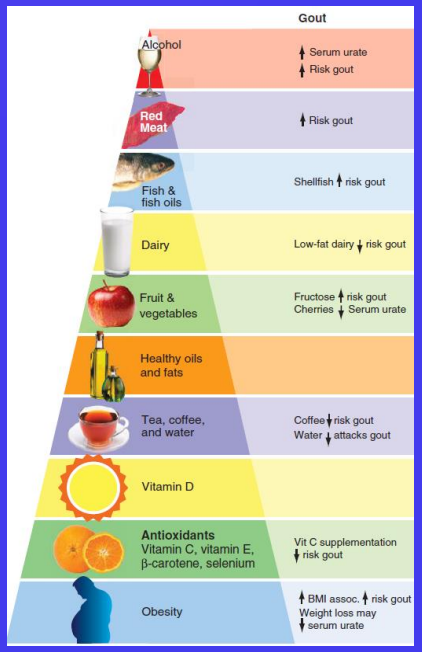
- HLA- B*5801 is strongly associated with severe cutaneous adverse reactions (SCAR) with allopurinol

PREVENTION OF RECURRENT ATTACKS

- Pegloticase (Krystexxa) is an intravenous uricase approved by the FDA in 2010. The mechanism of action involves metabolism of uric acid to allantoin.
- It is a third-line agent and is indicated for treatment of refractory gout

Diet & drugs

- Weight loss
- Limit their consumption of certain purine-rich foods (e.g., red meat, shellfish) and avoid alcoholic drinks (especially beer) and beverages sweetened with high-fructose corn syrup
- Some dietary factors are associated with reduced serum urate concentrations, including coffee, low- fat dairy products ,cherry and vitamin C
- Drugs: loop and thiazide diuretics
- Hypertension (losartan decrease UA)
- Hyperlipidaemia (fenfibrate decrease UA)



Complications of gout include the following:

- Severe degenerative arthritis
- Urate nephropathy
- Renal stones
- Increased susceptibility to infection
- Nerve or spinal cord impingement
- Fractures in joints with tophaceous gout

So this case is :

- Acute monoarthritis due to gout
- With psoriasis skin lesion that increase risk of gout
- Renal stone with recurrent LBP that associated with hyperuricemia


Thank
you!