**Gout MEQ**

Prepared by Germaine Loo and Cherie Gan

Mdm FKT is a 78 year old chinese female, premorbid ADL-I, Comm ambulant, who presents to you, the Internal Medicine HO on call who was admitted by the A&E for knee pain.

Her past medical history include:

1. HL
2. DM
3. IHD

- s/p previous PCI in 2010

1. Right femoral hernia s/p open repair
2. Prev unprovoked DVT on lifelong anticoagulation.

She reports to you right knee pain that has been long standing, but worsening over the past 2 to 3 days, pain score 8/10 limiting ambulation.

Q 1. Which of the below history would be most relevant to obtain to point you to a diagnosis (choose 4 out of 10)

1. History of trauma
2. Other joint involvements
3. Functional assessment of patient
4. Dietary history
5. Nature of pain
6. Previous surgical history
7. Compliance to medication
8. Infective symptoms
9. Family history of clotting disorders/ malignancy / rheumatological diseases
10. Patient’s BMI

Ans: A, B, E, H.

Q 2. The patient reveals to you that she has a history of fever x 1/7 duration, T max 38.3 degrees, associated with running nose and productive cough, with no Chest pain, breathlessness, and no recent sick contacts. Otherwise the right knee pain is worse on movement, better with rest, but over the past 2-3 day has been excruciating in nature. She does not recall any recent trauma to her knee. 3 months ago, she had a similar episode of an acutely swollen great toe that improved within 3 days, for which she did not seek treatment.

Her medication list includes atorvastatin, metformin, enalapril, carvedilol and warfarin.

On physical examination, Temperature is 38.5 degrees, BP 133/81, HR 96, RR 14, SpO2 100% on RA.

H S1S2

L clear

A soft no masses.

No cervical LNs

DRE: brown stools nil masses

**Right knee:** mild-mod effusion, active ROM to 45deg.

Warmth +

**Left knee:** no effusion.

Right & left ankles no effusion nor warmth.

Right MTPJ no swelling or warmth.

Other joints no swelling

No tophi seen

Which of the following would be the MOST important step in management?

1. Full septic Workup
2. Knee XRAYs
3. Joint aspiration
4. Serum urate level
5. Orthopedic Consult
6. Start empirical colchicine

Ans: C. Always rule out septic arthritis as it is an emergency condition. Untreated infection can destroy the joint in 1-2 days.

Q3. Blood tests results for your patient revealed:

Hb 14.9 TW 8.78 Plt 174 Ur 4.7 Na 135 K 4.2 Cl 99 Bicarb 26.3 Creat 123 CRP 152

Right AP, Lateral Knee Xrays showed mild soft tissue swelling of the right knee, and some degenerative changes of the knee joint is noted.

Your Registrar proceeded to perform a right knee aspiration for the patient and asked you to send off the relevant synovial fluid investigations. Before you could ask her what relevant investigations you need to order on citrix, she has disappeared. You then proceed to order which MOST relevant synovial fluid investigations? (choose 3 of 9)

1. Gram stain and culture
2. Cytology
3. ANA
4. RF
5. Cell count and differentials
6. Microscopy examination
7. AFB smear and culture
8. Protein
9. Glucose

Ans: A, E, F.

Q4. Right knee aspiration revealed:

Gram stain smear and microscopy examination: Polymorphs 1+, nil organisms seen. Numerous, extracellular, negatively birefringent crystals are seen. Joint fluid culture: nil BG. WBC: 4, 000 m^3.

Your team proceeded to treat the patient for an acute gout flare, and started patient on Colchicine, following which, Mdm FKT symptoms improved drastically in the next 2-3 days.

On the day of discharge, when you were about to pass the nurses Mdm FKT’s discharge documents, the patient stopped you and asked “ Doctor, I was reading on the internet, which of these foods can help me prevent getting gout again ah?”

1. Green leafy vegetable
2. Low-fat dairy product
3. Red Wine
4. Shellfish

Ans: B.

The addition of low-fat dairy products is appropriate for this patient with gout. **Low-fat dairy products have been shown to decrease the risk of gout flares both through uricosuric and anti-inflammatory properties.** He should also be advised to reduce intake of high-fructose beverages such as soft drinks because they are associated with gout flares due to metabolic pathways utilized in the metabolism of fructose, which lead to increased uric acid generation. Obesity is also a risk factor for gout and should be addressed as needed.

Some leafy green vegetables are high in purines, the nucleic acid component that is metabolized to uric acid. Thus, a recommendation to increase leafy greens as a dietary approach to gout treatment would be incorrect. However, intake of leafy green vegetables has not been shown to increase the risk of flares in population-based studies.

Alcohol is a well-established trigger for gout, probably due to several mechanisms, including uric acid production and kidney urate handling. Although wine has been found less likely to trigger gout flares than beer, alcohol consumption of any sort will increase the risk of flares overall.

Shellfish have long been established as a food that is likely to trigger a gout flare due to the high purine load and should therefore be restricted in this patient's diet.

Q5. Mdm FKT was discharged well and stable. 2 years later, coincidentally, you saw Mdm FKT during your polyclinic rotation. She reported having 3-4 episodes of acute joint swelling of the right knee and left big toe since the last time you saw her, and is here today as well, to obtain medications for her gout flare, this time of the left elbow joint. You decided that you should counsel her for the need to begin urate lowering therapy (ULT).

Which of the following is NOT an indication for starting ULT for Mdm FKT?

1. Chronic tophaeous gout
2. Chronic kidney disease
3. Urolithiasis
4. Gout flares affecting more than 2 different joints locations
5. Gout flares twice a year
6. Joint erosions
7. Gout flares more than twice a year

Ans: D.

* Consider uric acid lowering therapy in
  + Recurrent gouty attacks (>/=2 times a year)
  + Arthropathy with x-ray changes
  + Chronic tophaceous gout (aim SUA <300 to help dissolve the tophi)
  + Urolithiasis/ Uric acid nephropathy
  + Lower threshold to treat in patients with renal impairment
  + Conditions that may predispose to gout
    - ? after first gouty attack in chronic renal failure
    - Tumor lysis syndrome (treat prior to chemotherapy or radiotherapy)
    - Polycythaemia, lymphoproliferative, myeloproliferative
    - Psoriasis
    - Inborn errors of metabolism IEM
* Goal of urate lowering therapy is serum uric acid **SUA <360µmol/L.** However, goal of **SUA <300 micromol/L should be used in patients with tophi**, in order to speed resolution of tophi.

Q6. You then decided to start Mdm FKT on allopurinol 2 months later when her gout was in remission. Which of the following would you definitely NOT perform prior to starting allopurinol?

1. Check HLA B\*5801
2. Stop colchicine
3. Check patient’s renal function
4. Check patient’s liver function
5. Check patient’s FBC
6. Check Serum urate levels

Ans: B. Prophylatic treatment should be initiated with, or just prior to initiating ULT given the risk of precipitating an acute gouty flare. Allopurinol should be dose adjusted in CKD, and side effects of allopurinol include: BM suppresion, hepatitis

We should use colchicine as prophylaxis in initial phase of lowering SUA because allopurinol can cause increase in flares in the initial phase before serum urate target is reached

**When starting allopurinol, keep patient on colchicine prophylaxis (500mcg daily) until flares are infrequent and SUA below target. If renal impaired, give 500mcg (1tab) 2-3 x a week**

Q7. Four weeks after starting allopurinol, Mdm FKT is admitted to IM with rash, eosinophilia and raised liver enymes. She was diagnosed with allopurinol hypersensitivity syndrome and allopurinol stopped. During rheumatology consult, she also reveals that she has had a previous history of urinary stones. What other urate lowering therapy can you offer her?

1. Rasburicase
2. Probenecid
3. Febuxostat
4. Prednisolone
5. Sulfinpyrazone

Ans: Febuxostat.

Other ULT:

* Uricosuric agents
  + Probenecid
    - Start on 250mg BD and uptitrate slowly up to max of 3g
    - **Before starting probenecid, rule out renal insufficiency and ensure no history of renal stones**
    - CI: renal stones, GFR < 30-40ml/min
    - If starting on this warn patient of risk of stones and advise them to drink more water and avoi dehydration
  + Benzbromarone
  + Sulfinpyrazone
* Xanthine oxidase inhibitor (allopurinol also xanthine oxidase inhibitor)
  + Febuxostat – non purine xanthine oxidase inhibitor
    - Used as second line if allopurinol hypersensitivity and probenecid contraindicated
    - SE
      * Rash
      * Arthralgia
      * Nausea
      * LFT changes
* Rasburicase (uric acid – rasburicase/pegloticase  allatoin (does not crystalize)
  + Not really used in tx of gout. More used in tmour lysis syndrome.
  + Side effect of concern is that of hypersensitivity rxn that can be as serious as anaphylaxis

Q8. During the same outpatient visit, Mdm FKT was also diagnosed with essential HTN (SBP ranging from 140-160 as noted from her home BP diary). Which class of anti-hypertensive would you consider starting her on?

1. Hydrochlorothiazide
2. Ace-Inhibitors
3. Angiotensin receptor blockers
4. Calcium channel blockers
5. Nothing

The angiotensin receptor blocker (ARB) losartan is the most appropriate antihypertensive drug for this patient with hyperuricemia who is at increased risk for acute gout. Hypertension is a common comorbidity of gout and is found in approximately 74% of patients with gout. Antihypertensive drugs have variable effects on serum urate levels and risk of acute gout. A population-based, nested-case control study compared nearly 25,000 patients with a new diagnosis of gout with 50,000 control patients. The risk of gout was assessed according to antihypertensive drug class. **Losartan, but not other ARBs, and calcium channel blockers were associated with a reduced risk of gout (**relative risk for losartan: 0.81 [95% CI, 0.7-0.84]; relative risk for calcium channel blockers: 0.87 [95% CI, 0.82-0.93]). Both losartan and calcium channel blockers lower serum urate. Losartan, like probenecid, interferes with the urate-reabsorbing transporter, thereby promoting kidney urate excretion. The mechanism by which calcium channel blockers lower urate levels is unclear but may be mediated through increased glomerular filtration rate and increased urate clearance. Based upon these data, losartan and calcium channel blockers are the preferred antihypertensive agents if reducing the risk of gout is clinically relevant.

In this same study, ACE inhibitors, non-losartan ARBs, β-blockers, and diuretics were all associated with an increased risk of gout. The absolute risk of gout was greatest with diuretics, with an estimated risk of six events per 1000 person-years.

Choi HK, Soriano LC, Zhang Y, Rodríguez LA. Antihypertensive drugs and risk of incident gout among patients with hypertension: population based case-control study. BMJ. 2012 Jan 12;344:d8190.

Ans: D