Seed
GLOBAL HEALTH

Registrar Education Series

Rheumatology

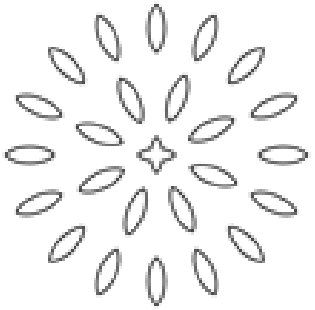
Sharing knowledge, strengthening health systems, saving lives

DynaMed

How to…

- What is the differential based on the chief complaint?
- What additional information do you want?
- How does the history narrow down the differential?
- What labs/imaging would be most helpful?
- What is the diagnosis?
- What is the assessment?
- What is the treatment/plan?



Rheumatology CASES

challenging the status quo

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Rheumatology Case 1

Chief Concern | Histories | PE | Assessment | Plan

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Chief Concern

Charity is a 47yoF with a PMH of smoking presents for hand pain

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Histories

HPI: Pain started insidiously 2 months ago in L ring finger at the knuckle and has spread to knuckles and the PIP joints of 2 fingers on both hands and the wrist. Pain is worse when she first wakes up and has stiffness in affected joints that subsides after her shower and drive to work, usually longer than 30 minutes. Has also noticed fatigue, about a 5-pound weight loss and myalgias.

PMH: smoking

PSH: none

FH: Mother had bad arthritis

Social: Originally from the Southern Province. Lives with husband and 3 children. Works. Enjoys gardening and playing with her children. Smokes 0.5ppd x 25 years. Drinks socially. No drugs.

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Physical Exam

GEN: 47yo female appearing stated age. Pleasant, conversive, in no acute distress. No eye redness, lung crackles, skin nodules/cysts, no splenomegaly.

MSK: Active synovitis on L and R hands in 2nd and 3rd MCP and PIP joints, as well as L wrist. Joints are boggy, tender, warm, puffy hands, swelling is limited to the joints. No atrophy of muscles near affected joints. Weakness out of proportion to pain, joints held in flexion.

Labs

Imaging

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Labs

FBC	
WBC	7.5
Hgb	10.9
Hct	33
Plt	420

RFTs/LFTs	
Na	138
K	4.6
Bicarb	25
Cl	101
BUN	11
Cr	85
Glucose	4.7
Ca	9.5
T bili	12
AST	35
ALT	32
Alk Phos	95

Rheum	
RF	21
CCP	33
ESR	25
CRP	12

*indicates the test was likely not indicated with this clinical presentation

Imaging

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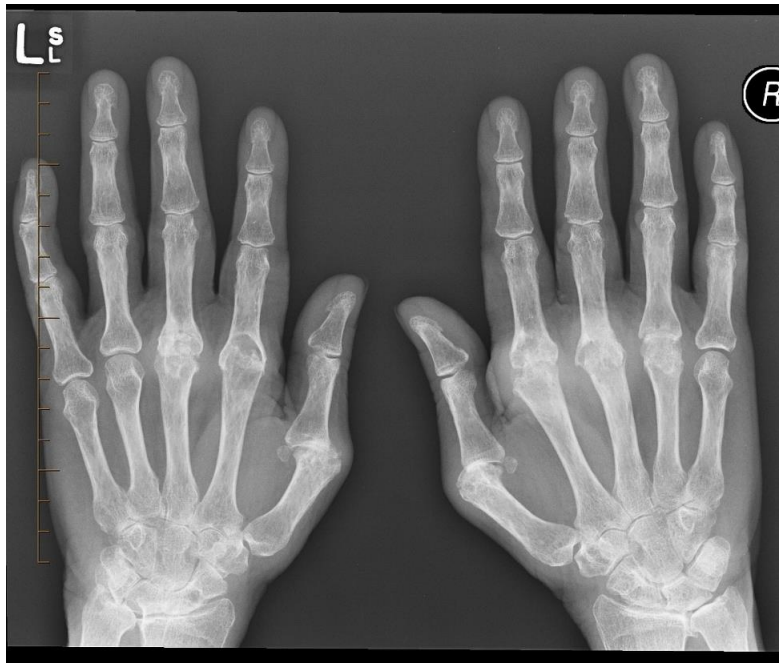
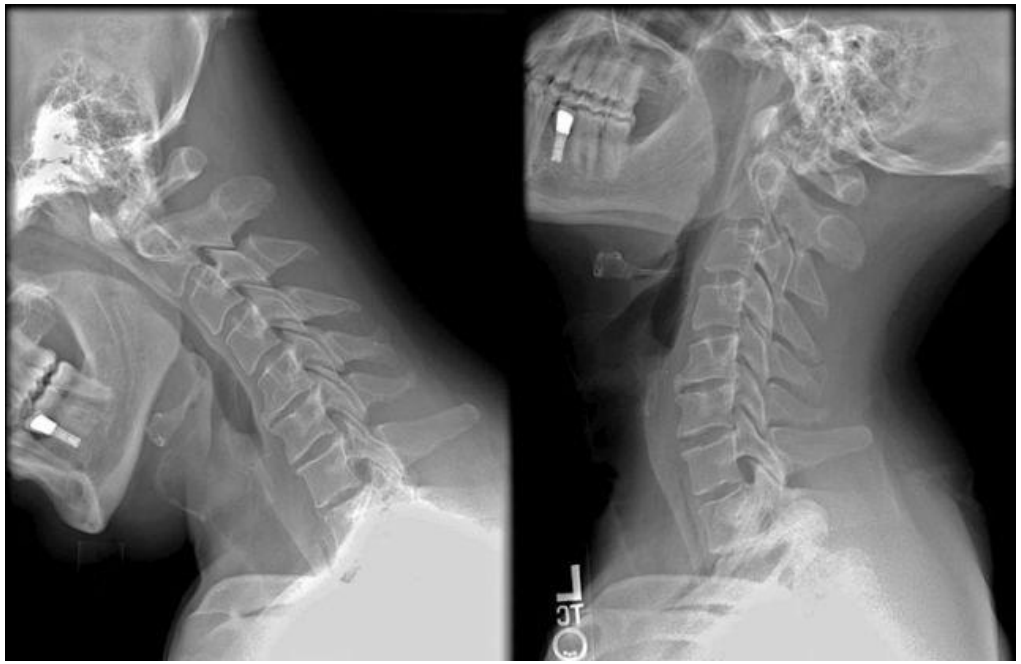
Imaging





Labs

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Assessment

Blessing is a 47yoF with a PMH of smoking who presents with active symmetric synovitis in 4 small joints and 1 medium joint. Given mild elevation RF and anti-CCP as well as inflammatory markers she meets the ACR/EULAR 2010 criteria for rheumatoid arthritis diagnosis with ≥1 definite clinical synovitis not explained by another disease plus a score of ≥6 for joint involvement, autoantibody serology, acute phase reactants and duration of symptoms.

Currently she does not have signs of extraarticular disease of the skin, heart, lung, eyes, heme, neuro which occur in 8-40% of patients.

Differential includes: OA, gout, fibromyalgia, pseudogout, psoriatic arthritis, ankylosing spondylitis, SLE, PMR, polyarteritis nodosa, Parvovirus B19, disseminated gonococcal infection, Sjogren, sarcoidosis

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Plan

- Start DMARD as soon as HepB, HepC, LTBI screening is complete.
- Up date all immunizations.
- Treat to target approach of clinical remission or low disease activity in long standing disease, adjusting therapy every 3 months.
- Start MTX 10mg weekly with titration up to 25mg.
  - Other options are leflunomide, HCQ, minocycline, sulfasalazine
- Can escalate adding other DMARD or anti-TNF biologic until treatment target reached
  - Many patients will be on MTX and an anti-TNF
- Short terms NSAIDs and low dose steroids (5-10mg of prednisone) can help with symptom management when initiating therapy and during flares
- Consider tapering DMARD therapy once treatment target is reached
- Monitor for complications and medication A.E. with ROS, FBC, RFTs, LFTs, ESR, CRP
- Stop immunomodulating medications during acute illnesses
- Return to clinic at least every 3 months

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Rheumatoid arthritis Summary

RA is a systemic inflammatory disease characterized by symmetric, relapsing, or chronic destructive synovitis

- If there is not active synovitis on exam it is not RA

Occurs 2-3x more in females, 30-60yo

Risk factors: family history, smoking, obesity, EBV

- Exposure to environmental trigger in genetically susceptible individuals triggers an autoimmune process

Extra-articular involvement: skin, eyes, heart, lungs, neuro, heme

Investigations at diagnosis: FBC, RFTs, LFTs, RF, anti-CCP, ESR, CRP

- Do not order indiscriminate autoimmune panels
  - , i.e. ANA, C3, C4, anti-DNA, etc if history and physical is consistent with RA
- Prior to starting DMARD check HepB, HepC, LTBI
- Monitor FBC, RFTs, LFTs, CRP, ESR every 3 months

If there is not access to rheumatology start MTX 10mg weekly and titrate

- Use short term NSAIDs and low dose steroids for symptoms when initiating DMARD and for flares

Taper DMARD once therapeutic target has been reached

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Rheumatology Case 2

Chief Concern | Histories | PE | Assessment | Plan

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Chief Concern

Douglas is a 58yoM who presents with a 2 week history of right knee pain

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Histories

HPI: Pain is on the medial side of the right knee, started 8 months ago and has increased in pain and frequency since. Will wake up with the pain for about 10 minutes then warms up, worse when getting up from sitting, while working and at night when resting. Has had to stop dancing due to pain. Has tried over the counter rubs without help.

PMH: Obesity, tobacco use

PSH: none

FH: DM, HTN, HLD

Social: Originally from Lusaka. Lives with his wife, 3 children and 2 grandchildren. Works manual labor. Enjoys playing football. Smokes ½ ppd, drinks socially and denies drugs.

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Physical Exam

GEN: Obese 58yo male appearing stated age. NAD. Pleasant and conversive.

R Knee:
INSPECTION: No asymmetry, erythema or edema of knee.
PALPATION: Tenderness over medial joint line. No tenderness to palpation of the patella, patellar and quad tendons, lateral joint line, LCL, MCL, pes, or IT band. Marked coarse crepitus.
ROM: Decreased flexion and extension with normal patellar tracking.
STRENGTH: Able to walk without a limp, strength 5/5 on extension and flexion and able to perform a full squat.
SPECIAL TESTS: Lachman's, posterior drawer, McMurray's, Ober's, bounce and collateral ligament testing all negative.

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Labs

*FBC	
WBC	7.5
Hgb	13
Hct	36
Plt	220

*RFTs/LFTs	
Na	138
K	4.6
Bicarb	25
Cl	101
BUN	11
Cr	90
Glucose	6.7
Ca	9.5
T bili	5
AST	35
ALT	32
Alk Phos	95

*Rheum	
RF	<10
CCP	5
ESR	7
CRP	3

*Other	
A1c	6.0
Chol	5.2
LDL	4.3
HDL	0.7
Trigs	2.6

*indicates the test was likely not indicated with this clinical presentation


Imaging


Procedures

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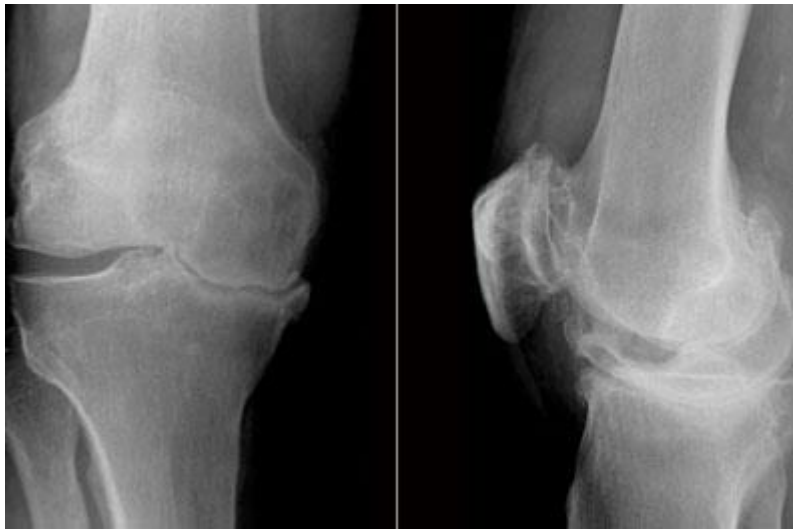
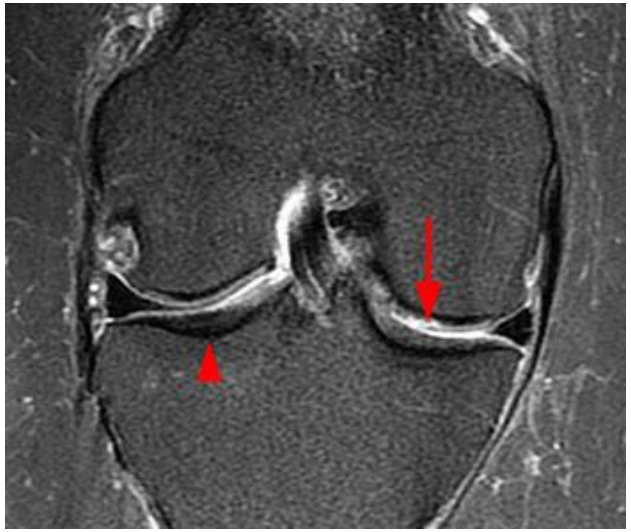
Imaging



*Knee x-ray: focal joint space narrowing



*Knee MRI: degenerative changes

Labs Procedures

*indicates the test was likely not indicated with this clinical presentation

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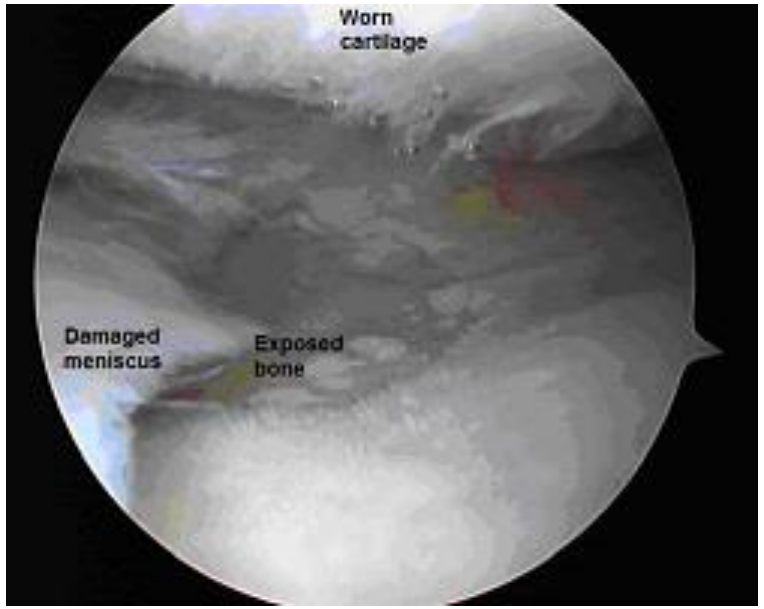
Procedures



*Knee arthroscopy: degenerative changes

Labs Imaging

*indicates the test was likely not indicated with this clinical presentation

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Assessment

Douglas is a 58yoM with a PMH of obesity who presents with chronic R knee pain which is progressive in pain and debility. Given that he is >40yo with usage related knee pain, short lived morning stiffness, functional stiffness and ≥ 1 typical sign on exam he likely has osteoarthritis and does not need an x-ray or any blood work as the results will not change the diagnosis or treatment.

Differential includes: RA, septic arthritis, psoriatic arthritis, gout and pseudogout, ligament, meniscus, bursitis, osteonecrosis

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Plan

- Goals for treatment will be to relieve pain/inflammation, reduction of stiffness and optimization of mobility, function, ROM and quality of life.
- Exercise: physical therapy and self management with daily low impact aerobic and strengthening exercises.
- Weight loss: since he has a BMI>25 which increases risk for progression.
- Medications: recommend a topical NSAID like diclofenac or oral (IBU), can add paracetomol if needed as well.
- Injections: can consider intra-articular corticosteroids for short term relief
- If the above fails can consider tramadol, duloxetine, herbals (avocado-soybean unsaponifiables, *Boswellia serrata* extracts, ginger, *Pinus pinaster* extracts, rosehip, and curcumin), kinesio taping, TENS, NMES, manual therapy, hyaluronic acid, PRP, prolotherapy.
- Will not prescribe lateral wedge insoles, glucosamine, chondroitin, arthroscopic surgery
- No labs unless there are signs/symptoms of an inflammatory process
- No imaging is needed

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Osteoarthritis Summary

Osteoarthritis is a degenerative process

- Articular cartilage loss, bone remodeling and prearticular muscle weakness

Risk factors:

- Age>50, female, high BMI, prior joint injury, repetitive joint stress, joint laxity, occupational/rec overuse, FH

LABS: are not needed in absence of s/s of an inflammatory condition

IMAGING is not needed if:

- > 40 years old with usage-related knee pain, short-lived morning stiffness, functional stiffness, and ≥ 1 typical sign on exam

EXERCISE THERAPY

- Daily low impact exercise, strengthening exercises and physical therapy

Physical therapy goals: improved pain, function, and joint stability

- Acupuncture is not recommended although moxibustin acupuncture improves pain

Weight loss if BMI >25

Medications: Topical NSAIDS, oral NSAIDs and acetaminophen are all first line

- Do not recommend glucosamine or chondroitin

Injections: corticosteroids can be given for temporary pain relief q 3month

- Hyaluronic acid, PRP, prolotherapy are options although all have low likelihood of achieving clinically important benefits

Surgery: may be an option after a trial of other therapies

- Arthroscopic surgery for debridement and/or lavage is not recommended

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Rheumatology Case 3

Chief Complaint | Histories | PE | Assessment | Plan

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Chief Complaint

Bryson is a 55yoM with a PMH of obesity, DM, HTN, HLD here today for a 1 day history of R foot pain.

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Histories

HPI: Yesterday he forgot to bring water to work and late last night he started having pain in his R big toe. When he woke up it was also in his ankle. The pain is a 10/10 and he does not want to bear weight on that side. He took ibu last night with some help. He has noticed both his toe and ankle are swollen and red. This is the third episode this year so far, the other two lasted about 1-2 weeks and resolved on their own.

PMH: obesity, DM, HTN, HLD

PSH: none

FH: obesity, DM, HTN, HLD

Social: Originally from the Northern Province. Lives with his wife and 2 children. Works as a roofer. Enjoys eating t-bone with nshima, preferred drink is Fruiticana. Does not smoke or do drugs. Drinks 5 beers most nights during the week.

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Physical Exam

GEN: Obese 55yoM appearing stated age in mild distress.

MSK: R foot/ankle:
INSPECTION: erythema, warmth and swelling over the 1st metatarsal head and medial malleolus.
PALPATION: tender to palpation on toe and ankle
ROM: decreased in all directions and painful for toe and ankle
Strength: 4-/5 in toe and ankle in all cardinal movements
Joints of the hands, knees and elbow are unaffected although there are small well circumscribed nodules on b/l elbows

Labs Imaging Procedures

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Labs

*FBC	
WBC	13
Hgb	13
Hct	36
Plt	330

*RFTs/LFTs	
Na	138
K	4.6
Bicarb	25
Cl	101
BUN	11
Cr	140
Glucose	9.3
Ca	9.5
T bili	9
AST	35
ALT	32
Alk Phos	95

Rheum	
Uric acid	7.5
ESR	35
CRP	23

*Other	
A1c	7.9
Chol	5.5
LDL	4.3
HDL	0.5
Trigs	3.7
Alb/Cr	345

Imaging

Procedures

*indicates the test was likely not indicated with this clinical presentation

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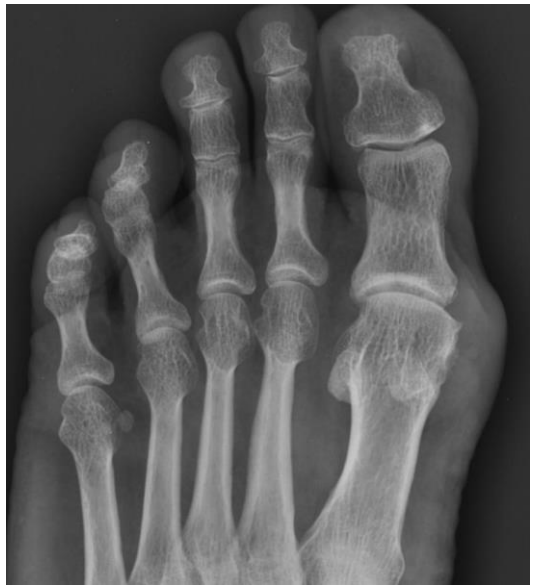
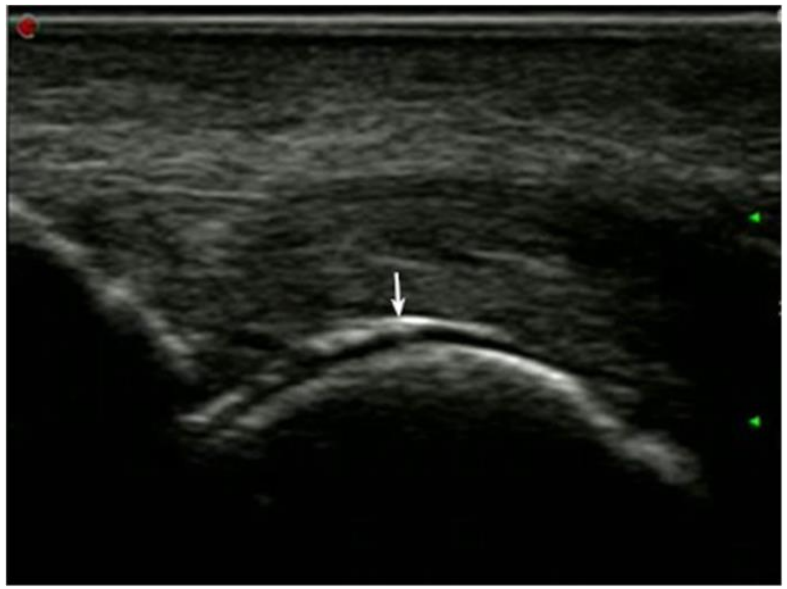
Imaging



*xray with non-specific soft tissue swelling



*U/S with double contour sign

Labs Procedures

*indicates the test was likely not indicated with this clinical presentation

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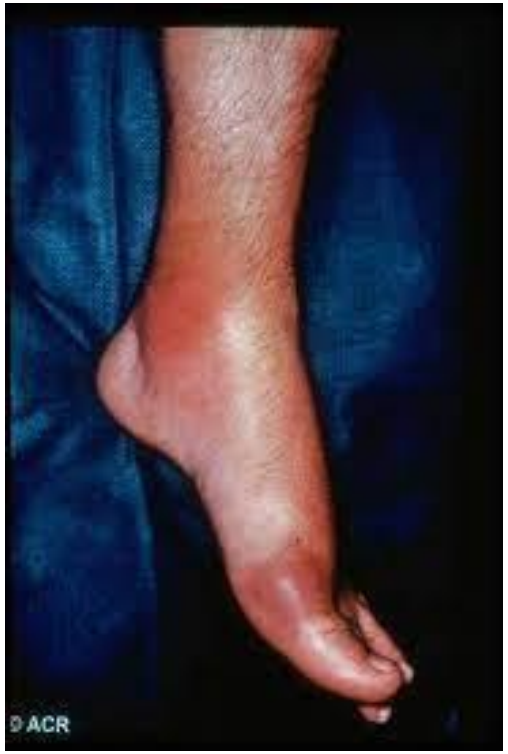
Procedures



Failed aspiration

Labs

Imaging

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Assessment

Bryson is a 55yoM with a PMH of obesity, DM, HTN and HLD here today for acute R big toe and ankle pain with marked swelling, redness and warmth. Initial concern is a septic joint but given this has occurred and been self limited in the past and he has the typical presentation with location, timing, PE findings and histories/risk factors of obesity, HTN, HLD, high purine diet with lots of red meat as well as soda and is on diuretics and valsartan this makes gout the most likely diagnosis. His uric acid level is elevated although 85-90% of people with elevated uric acid never become symptomatic which is why the clinical presentation along with elevated acute phase reactants makes gout stand out.

Differential diagnosis include: septic arthritis, pseudogout, bacterial cellulitis, reactive arthritis, rheumatoid arthritis, psoriatic arthritis, and osteoarthritis

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Plan

- Although the gold standard for diagnosis is urate crystals on fluid analysis it is difficult to obtain an adequate sample and can cause undue pain. Will defer on fluid analysis.
- Can treat the acute attack with low dose colchicine 1.0-1.2mg followed 1 hour later with 0.5-0.6mg if within 12-36 hours of flare, NSAIDs or corticosteroids i.e. prednisone ≥ 0.5 mg/kg/day orally for 5-10 days, prednisolone 30-35 mg/day orally for 3-5 days
- For attacks with severe pain can consider combo therapy
- Nonpharmacologic treatments in addition to medication, including rest, ice packs, and elevation of affected joints
- Given he meets the criteria for prophylaxis which includes 2 or more attacks per year, tophi, urate arthropathy, renal stones, and/or reduced kidney function will initiate long term urate lowering treatment
- First line are xanthine oxidase inhibitors. Allopurinol initial dose 100 mg/day orally, titrated up by 100 mg/day every few weeks until the target uric acid level <6 mg/dL is achieved, up to maximum 800 mg/day
- Anti-inflammatory prophylaxis with colchicine 0.5-0.6 mg once or twice daily, a nonsteroidal anti-inflammatory drug, or corticosteroid is recommended for all gout patients when ULT is started and should be continued for at least 6 months
- Counseled on decreasing weight, red meat, seafood, alcohol and soda.
- Change diuretic and valsartan to CCB and losartan.

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Gout Summary

Gout is a chronic disease of recurrent attacks of severe pain and swelling due to urate crystal inflammation

Hyperuricemia (>6.8mg/dL) is asymptomatic in 85%-90% people

- males, older age, developed countries, Taiwanese, Pacific Islanders

Risk factors:

- hyperuricemia, obesity, HTN, high consumption of alcohol and purine rich foods, ASA, diuretics, BB, ACEI, ARBs

Diagnosis: gold standard is fluid analysis but is usually not done

History and PE along with elevated acute phase reactants suggest gout

- Uric acid may be low during an acute attack

X-rays may be non-specific early in disease and have limited value for diagnosis

- Ultrasound in an acute flare my be more helpful for diagnosis

Subsequent attacks are usually longer and involve more joints

- Chronic tophaceous gout and chronic gouty arthritis are destructive and disabling taking years to develop

Treatment options for acute flares include NSAIDs, colchicine and corticosteroids

Initiation of long-term ULT in patients after a first attack or in patients with infrequent attacks is not recommended

1st line treatment options include xanthine oxidase inhibitors of which allopurinol is the most common

- 2nd line treatment options in patients with normal renal function include uricosuric agents such as probenecid, benzbromarone, and lesinurad

Consider measuring uric and creatinine every 2-5 weeks while titrating urate lowering therapy

- Treat most patients to a uric acid <6 mg/dL
- Continue ULT during an acute gout attack

Complications:

- recurrent flares, advanced gout with tophi, chronic gouty arthritis, joint erosions, carpal tunnel syndrome, CKD, AKI, increased risk of CAD, mortality

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Rheumatology Case 4

Chief Complaint | Histories | PE | Assessment | Plan

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Chief Complaint 4

Regina is a 38yoF who presents with a 2 week history of joint and muscle pains and overall feeling bad

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Histories

HPI: Has had pains in multiple joints in the upper and lower extremities. Along with fevers, a rash, fatigue, hair loss, oral ulcers and shortness of breath. Has never had symptoms like this in the past and cannot identify an illness or inciting event. Has tried a number of remedies for her different symptoms but has not found relief.

PMH: None

PSH: None

FH: sister has an autoimmune disease

Social: Originally from the Lower Zambezi. Lives with her husband. Works at the local level 1 hospital. Enjoys spending time with friends, binge watching shows and hosting kitchen parties. Denies smoking, alcohol and drugs.

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Physical Exam

GEN: Regina is a 38yoF who appears older than stated age, is in no acute distress but does not appear happy and does not make small talk.

Pertinent positives: fever, lymphadenopathy, weight loss, aphthous ulcers, maculo-uticarial and papluar lesions in sun exposed areas.

Labs

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Labs

FBC	
WBC	1.7
Hgb	9.6
Hct	28.9
Plt	110

RFTs/LFTs	
Na	138
K	4.6
Bicarb	25
Cl	101
BUN	11
Cr	120
Glucose	4.8
Ca	9.5
T bili	13
AST	35
ALT	32
Alk Phos	95

Autoimmune	
ANA	≥1:80
dsDNA	>8
Anti-Ro (SSA)	>20
Anti-La (SSB)	>20
Anti-RNP	>20
Anti-sm	>20
Antiphos	pending
C3	<82
C4	<14

Other	
A1c	5.5
Chol	4.3
LDL	3.2
HDL	1.3
Trigs	1.7
UA	No prot
Alb/Cr	< 5

*indicates the test was likely not indicated with this clinical presentation

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Assessment

Regina is a 38yo female with no significant PMH who presents with a number of non-specific symptoms and PE findings affecting multiple systems. She meets the EULAR/ACR 2019 classification for Systemic Lupus Erythematosus by having a positive ANA titer of ≥1:80, ≥ 1 clinical criterion and a total score of ≥10 points. She also meets the SLICC 2012 criteria per the online SLICC calculator.

On top of the clinical picture antibodies and complement levels can change according to disease activity and are not just used in diagnosis.

Differential includes: drug induced lupus, RA, dermatomyositis, Sjogren, systemic sclerosis, mixed connective tissue disease, autoimmune thyroid disease, HIV, tinea infection, sarcoidosis, lymphoma, psoriasis

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Plan

- As primary care, the role is to determine the diagnosis or to highly suspect SLE and refer to rheumatology.
- Prior to starting medications she will need a baseline ophthalmic exam, FBC, serum creatinine and albumin, UA and urine albumin:creatinine ratio.
- If there is a long wait for rheumatology or the patient cannot access rheumatology the treatment goals include minimizing organ damage, preventing flares during periods of stability, and optimizing health-related quality of life.
- First line is hydroxychloroquine 300-400 mg/day (maximum daily dose 5 mg/kg of body weight), unless not tolerated or contraindicated
- If corticosteroid use is required, treatment should be minimized and tapered as soon as possible. Initiation of immunomodulatory agents may aid in tapering
- If not responding to HCQ (alone or in combination with glucocorticoids) or patients who are unable to reduce glucocorticoid dose below ≤ 7.5 mg/day consider adding an immunosuppressive agents, such as, methotrexate (10-25mg/wk), azathioprine, or mycophenolate mofetil.
- Follow up q6-12 months with FBC, ESR, CRP, albumin, Cr, alb:cr ration and UA in inactive disease

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SLE Summary

SLE is a multisystem autoimmune disorder of connective tissue

- autoimmunity in individuals with a genetic predisposition after exposure to environmental triggers
- can involve kidneys, skin, musculoskeletal system, cardiovascular system, central and peripheral nervous systems, and blood

Prevalence is 20-70 per 100,000 people

- Women, 3rd-5th decade, people of African descent

Risk factors:

- Family history, genetics, smoking, occupational exposures, endometriosis, stress-related disorder, celiac, OCP and HRT

Diagnosis is clinical and supported by antibodies

Labs: start with ANA (titer ≥80), if negative no further SLE work up should be pursued

- Other labs: dsDNA antibody, anti-Ro, anti-La, anti-RNP antibody, anti-smith antiphospholipid, C3 and C4
- Do not order large indiscriminate autoimmune panels, perform targeted testing based on history and physical

Criteria must be met to confirm diagnosis

- EULAR/ACR 2019 or SLICC 2012

Treatment: first line is HCQ

- Can add glucocorticoid to HCQ if required
- If not responding can add methotrexate, azathioprine or mycophenolate
- Cyclophosphamide may be considered in patients with severe organ- or life-threatening disease

There are organ specific treatments as well

Complications:

- nephropathy, cardiovascular disease, cerebrovascular disease, seizures, cognitive impairment
- thrombosis, cancers, pleural disease, interstitial lung disease, hematologic diseases