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Objectives 1, 2, 3, 5 and 6 will be covered with a case

OBJECTIVE 1

In a patient presenting with joint pain, distinguish benign from serious pathology (e.g., sarcoma, septic joint):

a) By taking pertinent history
b) By investigating in a timely and appropriate manner (e.g., aspirate, blood work, an X-ray examination).

OBJECTIVE 2

In a patient presenting with non-specific musculoskeletal pain, make a specific rheumatologic diagnosis when one is evident through history, physical examination, and investigations. (e.g., gout, fibromyalgia, monoarthropathy vs. polyarthropathy).

OBJECTIVE 3

In a patient presenting with monoarthropathy, rule out infectious causes. (e.g., sexually transmitted diseases).

OBJECTIVE 5

Clinically diagnose ligamentous injuries. Do NOT do an X-ray examination.

OBJECTIVE 6

In a patient presenting with joint pain, include systemic conditions in the differential diagnosis (e.g., Wegener's granulomatosis, lupus, ulcerative colitis).

Case:

Nicole is a 25 year-old female who presents to your office with a seven-week history of pain and swelling in her knees.

Excluding red flags can quickly help narrow your differential and rule out any pathology warranting urgent or emergent investigations. The main serious joint pathology to exclude would be a septic joint and fracture.

Asking about a history of trauma is a quick screen to rule out any concern for a fracture causing joint pain. In this case, a septic joint would be unlikely due to the length of the presentation and the fact it's a bilateral presentation. Some key questions to ask regarding infection are:

- Fever and other constitutional symptoms
- Complete inability to bear weight
- Rapid progression or onset of symptoms
- Immunocompromised
- History of IV drug use
- Prosthetic joint
- Risk of sexually transmitted infections (gonorrhea)
- Tick bites (exposure to Lyme disease)

Red flags on history in the context of a red, hot, swollen joint raises suspicion for a septic joint. Septic joints have significant morbidity and mortality, and permanent joint destruction can occur within 24 to 48 hours of symptom onset. Joint aspiration is indicated if there is suspicion of a septic joint.

- Visually inspecting the fluid can provide some initial clues. Normal joint fluid is typically clear or straw colored and viscous. Infectious fluid is typically cloudy, with a low viscosity (low viscosity = more white blood cells or bacteria)
- The joint fluid should be sent for cell count with differential, gram stain, culture and crystal analysis
- Try to avoid starting antibiotics before joint aspiration
- Imaging Studies may not be helpful in diagnosing an acute septic joint, but are important to do as certain joints such as the hip, sacroiliac and spinal joints will require diagnostic imaging for diagnosis and guiding aspiration studies.
- Check with the lab to know which containers/tubes are needed for joint fluid analysis. The last thing you want is a rejected sample!
- Check out the references for a great article from the American Academy of Family Physicians, Approach to Septic Arthritis, which has a great table with differential diagnoses based on fluid analysis

So, for our case, let's assume there are no red flags in history. Where do we go from here?

Clarifying the duration of joint pain and the number and location of joints involved can further narrow your differential diagnosis.

Acute joint pain lasts less than 6 weeks, chronic joint pain lasts longer than 6 months:

- Septic arthritis and crystalline arthropathies, such as gout, are common causes of acute joint pain
- Insidious onset is often associated with degenerative joint disease, such as osteoarthritis
- Periods of exacerbations and remissions can occur with inflammatory pathologies
- Onset within one to four weeks after GI or GU infection is suspicious for reactive arthritis

Monoarticular refers to one joint, oligoarticular is greater than one joint but less than five, and polyarticular refers to greater than or equal to five. It's probably worth your while to remember what joints are commonly affected with specific inflammatory arthropathy, as this will help narrow your differential considerably.

- Osteoarthritis is a non-inflammatory arthropathy and is often asymmetrical and polyarticular but may present initially as monoarticular. It commonly affects the knees, DIP, PIP, 1st CMC, 1st MTP, hip, and the lumbar and cervical spine
- Rheumatoid arthritis is symmetric and polyarticular, commonly involving the PIP, MCP (aka the knuckle joint), and knees.
- Ankylosing spondylitis affects the spine and large joints such as the hips, shoulders, and SI asymmetrically.
- Psoriatic arthritis and reactive arthritis often present as asymmetric oligoarthritis.
- Gout commonly affects the first MTP, midfoot, ankle, and knee

In addition to symptom duration and number of affected joints, there are some other key questions to ask on history for a patient presenting with joint pain. These include:

- Location of pain: tenderness along the joint line suggests articular pathology. Pain in the muscle or around the joint suggests an extra-articular cause such as tendinopathy, ligament injury, bursitis, or muscle injury
- Stiffness: > 1 hr is suspicious for an inflammatory process. Patients with degenerative joint disorders can have stiffness, but it generally does not last more than 30 minutes
- Presence of pain at rest: degenerative joint disease is generally better with rest, compared to worsening pain in inflammatory joint disease
- History of injury or surgery increases the risk of degenerative joint changes
- Extra-articular involvement
    - A quick review of systems for rashes, skin changes, oral or nasal ulcers, respiratory issues, and ocular involvement should heighten your suspicion of inflammatory pathology
    - Discoid rash, malar rash, photosensitivity, oral ulcerations, and pleuritis are part of the diagnostic criteria for SLE
    - Dactylitis, psoriasis, and nail involvement can indicate psoriatic arthritis
    - Sinusitis and pulmonary involvement can also be seen in granulomatosis with polyangiitis, formerly known as Wegner's Granulomatosis
    - Fever, weight loss, or general malaise are non-specific but warrant further investigation

- If the patient has a history of inflammatory bowel disease or psoriasis, determining if the pain is associated with a flare of those symptoms is also important
- In the show notes, you can find information regarding specific extra-articular findings for various presentations.

Let's revisit our case.

- Nicole has had progressive worsening pain and swelling in both knees for seven weeks
- She has noticed sore wrists, hands, and fingers, especially in the morning. Nicole cannot hold her coffee until about an hour after she wakes up because her hands are so stiff
- Her pain improves throughout the day, and worsens when she is less active in the evenings
- She tore her right meniscus two years ago and had an arthroscopic repair but has had no further issues
- A review of systems is positive for a recent eye infection, fatigue and a 10lb weight loss over the past two months
- She has no other medical conditions, does not take any medications, and she has no known allergies
- She has not recently had any infections
- She thinks she may have an aunt who has arthritis, but she is unsure what kind

Based on her history, Nicole has a symmetrical polyarthritis with > 1hr morning stiffness, constitutional symptoms, and possible extra-articular ocular involvement. Our differential right now includes several inflammatory arthropathies and systemic illnesses.

- Because Nicole is female and has no axial involvement, ankylosing spondylitis is not in our differential
- She has no other medical conditions and has not had any recent infections, ruling out enteropathic or reactive arthritis, respectively.
- Nicole does not have a history of psoriasis, but up to 10% of individuals show arthritis as their first presentation.
- She did have an injury to her knee, which puts her at higher risk of osteoarthritis. However, she is young, and her surgery was only a short time ago, making it less likely.
- Gout may be polyarticular but would be unusual in a 25-year-old female. Gout occurs very rarely in pre-menopausal females.

Physical exam is a valuable tool when differentiating arthropathies. The acronym SEADS is helpful to remember what to look for when inspecting a joint; swelling, erythema, atrophy, deformity, and skin changes.

Palpate joints for crepitus, tenderness, effusions, nodules, and warmth. A complete musculoskeletal exam also includes active and passive range of motion, strength and special tests.

As we have already discussed, an inflammatory joint will generally be red, hot, swollen, and tender. Do not be fooled though. Individuals with OA can have flares with joint swelling. Some specific exam findings for common rheumatologic diseases are:

- OA - crepitus, tenderness along the joint line, bony prominences such as thumb squaring, Heberden's nodes at the DIP, and Bouchard's nodes at the PIP, and limited ROM of the affected joint
- Gout - severe pain with palpation, limited joint mobility, and evidence of tophi
- Reactive arthritis - enthesitis (plantar fasciitis and achilles tendonitis), a rash called ketoderma blennorrhagicum (hyperkeratotic skin on palms and soles of feet), Circinate balanitis (a painless rash around the Glans Penis), cervicitis, prostatitis, and conjunctivitis
- Rheumatoid arthritis
    - Nodules
    - Swan neck deformity (hyperextension of the PIP and flexion of the DIP)
    - Boutonniere deformity (flexion of the PIP with extension of DIP)
    - Ulnar deviation at MCP and radial deviation at wrist
- Ankylosing spondylitis - mid and lower back pain and stiffness, decrease spine ROM on Schober test, decrease chest wall expansion, exaggerated lumbar lordosis and thoracic kyphosis, increased occiput to wall distance indicating increased c-spine flexion, enthesitis of achilles and plantar fascia, and uveitis.
- SLE - malar "butterfly" rash of the nose and cheeks sparing the nasolabial folds, discoid rash, painless oral or nasal ulcers, and alopecia
- Psoriatic arthritis - evidence of psoriasis, dactylitis, nail pitting, onycholysis, and sacroiliitis

Nicole's physical exam shows the following:

- She is alert and oriented, but appears pale and tired
- She has lost 6 kg 12 lbs since her last visit 4 months ago
- Bilateral swollen knees which are warm and tender to touch
- Swelling and tenderness to the 2nd-5th MCPs bilaterally and the wrists, with decreased active and passive range of motion
- Scarring to the right knee, consistent with her previous surgery
- No obvious deformities
- Right eye conjunctivitis, no discharge. She pulls away when you try to examine her eye with your light
- Cardiovascular, abdomen, respiratory, and gross sensory neurologic exam are all normal

So, where do we go from here?

Diagnostic imaging and blood work will provide additional information to further guide our differential diagnosis.

As we are suspicious of inflammatory pathology, an x-ray will help distinguish between degenerative and destructive joint changes and will provide a baseline going forward. As a general rule, x-rays are not always necessary for a soft tissue type injury.

The inflammatory markers ESR and CRP are sensitive, meaning they are good indicators of inflammation, but they are not specific to the cause of inflammation. About one third of the time, the ESR and CRP are discordant. Most labs will allow you to use only CRP's, as ESR's are more labour intensive.

Rheumatoid Arthritis may be Sero Positive - 80% - or Sero Negative – 20 %. What we formerly called the Sero Negative Spondyloarthropathies (SNSA) are now called the Spondylo Arthropathies - SpA. It includes Peripheral and Axial SpA's. SpA's include:

- Reactive Arthritis
- Idiopathic Ankylosing Spondylitis
- Psoriatic Arthritis
- Enteropathic Arthritis (aka arthritis associated with inflammatory bowel disease).

Each of the four SpA'a may have Axial or Peripheral Components or both Components at once.

The term Peripheral Spondyloarthopathy is an oxymoron as you are describing a "Peripheral Axial Disease" and the term Axial Spondyloarthropathy is redundant as you're describing an "Axial Axial Disease".

Ordering rheumatologic laboratory investigations can be overwhelming, so we will review some key points for each test.

- Rheumatoid Factor has a sensitivity of about 60 – 90% and a Specificity of about 85%
- Anti-CCP has a specificity of about 95% for RA and can be used to predict disease severity
- ANA is 95% sensitive for systemic lupus erythematosus, but is not specific
- Anti-dsDNA is a specific test for systemic lupus erythematosus in the range of 60-70%
- Anti-histone antibody is highly specific for drug-induced systemic lupus erythematosus
- If back pain is present and there are other signs of systemic inflammation such as uveitis, enthesitis, inflammatory bowel disease, or family history of ankylosing spondylitis, HLA-B27 testing can be considered to evaluate for ankylosing spondylitis. It is important to remember that not everyone with back pain requires this test, and a negative test does not rule out ankylosing spondylitis
- ~~p~~c-ANCA is both specific and sensitive for granulomatosis with polyangiitis.
- Elevated serum uric acid levels may help support a diagnosis of gout, however it does not need to be elevated to diagnose a gout flare. It is ~~best used~~ helpful when ~~to~~ assessing response to urate lowering therapy, such as allopurinol

- Check out the show notes for further explanation of the lab tests and their sensitivities and specificity. The Cleveland Clinic Journal of Medicine also has a great article on rheumatologic blood work, which is included in the reference list for this episode

So, what investigations should we order for Nicole based on our differential diagnosis?

- Routine CBC, renal function and liver transaminases are indicated
- CRP, RF, Anti-CCP, and ANA
- X-Rays of the hands, knees, and chest, (The Chest is done because diseases like RA and SLE may have sub-clinical findings such as a small pleural effusion)
- We are not suspicious for drug induced systemic lupus erythematosus, so anti-histone antibody testing is not indicated
- Ankylosing spondylitis is not on our differential, so HLA-B27 testing is not indicated
- Her clinical presentation does not fit with a diagnosis of gout, so uric acid testing is not indicated

Her blood work results show:

- Elevated CRP
- Highly positive RF
- Positive anti-CCP
- Her ANA is negative which essentially rules out SLE
- CBC, renal function, and liver transaminases are all within normal limits
- Her Diagnostic Imaging Tests are all normal

So, do we have enough information to make a diagnosis?

A score greater than 6 in the American College of Rheumatology criteria is diagnostic for rheumatoid arthritis. Points are assigned based on joint involvement, serology, acute phase reactants, and symptom duration.

Based on your thorough history, physical exam and laboratory investigations, Nicole's score based on the American College of Rheumatology criteria is 7, indicating a diagnosis of rheumatoid arthritis.

We don't have enough time to go through the diagnostic criteria for all rheumatic diseases, so it is important to know where to look for them! The American College of Rheumatology has published diagnostic criteria for rheumatoid arthritis, systemic lupus erythematosus, osteoarthritis, polymyalgia rheumatica, and many more, so be sure to have this resource saved.

We will cover treatment for Nicole and her new diagnosis of rheumatoid arthritis later in this episode.

One other rheumatologic condition which we did not cover in this case, but is worth mentioning, is polymyalgia rheumatica, PMR. PMR is a non-articular rheumatic disease which causes pain and stiffness. It affects women twice as much as men and is associated with Giant Cell Arteritis in about 15% of cases. It is generally seen in patients over 50 years of age and therefore would not be part of the differential diagnosis in our case. Patients will describe symmetrical morning stiffness, and pain in proximal muscle groups, including the shoulders, neck, hips, and thighs. They may present with constitutional symptoms. Blood work demonstrates an elevated CRP with a negative RF and anti-CCP. On exam, patients will have tenderness over the area but no true weakness or muscle atrophy.

We've covered a lot of information in our case! Let's move on to our other objectives.

OBJECTIVE 4

In patients presenting with musculoskeletal pain, include referred and visceral sources of pain in the differential diagnosis. (e.g., angina, slipped capital epiphysis presenting as knee pain, neuropathic pain).

The main take away point here is that joint pain can be the presenting symptom for conditions that have nothing to do with the joints! Your history, physical exam and application of clinical context will guide you towards potential referred sources of pain.

Some examples are:

- Children who present with non-traumatic hip, groin, thigh or knee pain should have an x-ray to rule out slipped capital epiphysis
- A burning sensation over the extremity is suspicious for neuropathic pain
- Elderly individuals, diabetics, and women can present with atypical symptoms of angina, such as back pain or arm pain

OBJECTIVE 7A

In patients with a diagnosed rheumatologic condition, actively inquire about pre-existing co-morbid conditions that may modify the treatment plan.

What are some components of the past medical history that are important to consider in patients with a diagnosed rheumatologic condition?

Many rheumatologic medications have contraindications or serious side effects. A thorough history before initiating treatment can help you make the best choice for your patient. Specifically ask about:

- Liver disease
- Gastrointestinal disorders, such as peptic ulcer disease, dyspepsia and gastrointestinal bleeds
- Kidney problems, such as chronic renal impairment and history of acute kidney injury
- Cardiovascular disease, such as heart attack, stroke, hypertension and heart failure
- Ask about risk factors for infectious diseases, such as hepatitis B & C, TB and HIV

Are there any social history questions that would be pertinent for these patients?

Asking about alcohol use is important, as many medications have a risk of hepatotoxicity.

Discussing family planning early on enables the adjustment of medications before pregnancy, and provides the opportunity to counsel on the appropriate dose of folic acid supplementation in this patient population. This is especially true in young women with RA or SLE.

I've heard that once a disease modifying antirheumatic drug has been started patients can't get immunizations! Is this true?

While most immunizations are safe, live immunizations should be avoided once disease modifying antirheumatic drugs have been started. Ideally, patients will have their immunizations up to date before starting therapy. Refer to the Canadian Immunization Guide for the most up to date recommendations on the immunization of special patient populations.

OBJECTIVE 10

In patients with rheumatoid arthritis, start treatment with disease-modifying agents within an appropriate time interval.

When should I start thinking about starting patients on disease-modifying anti-rheumatic drugs?

The short answer is as soon as possible! It's been demonstrated that earlier diagnosis and drugs prevents joint damage, makes remission easier to achieve and prevents loss of function. Ideally, treatment should start within three months of symptom onset.

Is this something that falls within the scope of family practice?

That's a great question! It will depend on the location of the prescriber and access to a rheumatologist in that area.

Family physicians will often start patients on methotrexate if specialist consultation is not readily available. Biologics or Synthetic Specific DMARD's such as Janus Kinase Inhibitors should

normally be started by Rheumatologists or Internists with a special interest in rheumatology rather than family doctors.

Additionally, some insurance companies will only cover the cost of biologic medications if a specialist prescribes them.

What should I do as part of pre-treatment work up for my patients?

Pre-treatment evaluation before starting pharmacologic therapy includes baseline CBC, aminotransferases, CRP, and, in the setting of immunomodulators, screening for latent TB and hepatitis B and C.

Once treatment has started, what should I be monitoring to assess the effectiveness of the treatment?

Generally, the target is low disease activity or remission. Five main treatment goals can guide your monitoring for treatment effectiveness. These are:

1. Minimization of joint pain and swelling
2. Prevention of radiographic damage
3. Prevention of visible deformities
4. Maintaining quality of life
5. Controlling extra-articular manifestations.

A treat to target approach is recommended, which involves dose optimization of methotrexate and subsequent addition of DMARDs as needed. Regular, systematic monitoring and treatment adjustment minimizes inflammation, preventing joint damage.

Next we will cover objectives 7B and 9B.

OBJECTIVE 7B: In patients with a diagnosed rheumatologic condition: choose the appropriate treatment plan

OBJECTIVE 9B: In patients experiencing musculoskeletal pain, treat with appropriate doses of analgesics.

The treatment of rheumatologic conditions is an extensive topic, in the interest of time we will not be going into the fine details. We will review key management points from the perspective of family medicine, so buckle up for the ride!

First, we will go through nonpharmacologic strategies, as these are crucial in managing any progressive joint disorder.

1. Physical activity

- Cardiorespiratory, strength training, joint rom activities are beneficial for all
- Tai chi can be beneficial for knee and hip osteoarthritis
- Every Arthritis Patient should have their own Joint Exercise Program tailored to their joint needs, and developed for them by a Physiotherapist

2. Psychosocial interventions
    - Self-efficacy and self-management programs, which can be found on patient support websites
    - Counseling - emotional / psychological support for chronic disease
    - Cognitive Behavioural Therapy (CBT)

3. Joint protection, such as splints and braces

4. Ambulation aids can improve function and ambulation. They also increase patients involvement in activities of daily living

5. Heat and cold for osteoarthritis
    - Heat can relax muscles, lubricate joints, and relieve stiffness. It may be beneficial in the morning and before physical activity to loosen up the joint
    - Cold reduces swelling, blood flow and blocks nerve impulses. It improves range of motion, function and strength

6. Weight loss was traditionally recommended for osteoarthritis based on the idea of decreasing the load on weight bearing joints. There is more evidence that exercise decreases pain and improves function.

    While maintaining a healthy weight should be a goal for all patients, as we all know it is often very difficult for patients to lose and maintain weight and can be discouraging when they don't see results. Focusing on the benefits of exercise for improving joint symptoms may have the secondary benefit of weight loss without the psychological impacts.

7. Gout is the only joint disorder when dietary measures can improve symptoms. Purine intake should be limited, which includes liver, kidney, beef, lamb, pork, sardines and shellfish. High-fructose corn syrup and alcohol should also be limited.

    Next, we will move on to the key management points for osteoarthritis

    1. Acetaminophen is often used initially but the evidence for efficacy is weak in OA. One of the reasons it's used as the initial choice relates to its farther greater safety compared to NSAID's, especially in older patients. Typically, an initial trial may be 1 g po BID for about two weeks. If not effective we may gradually increase to as high as 1 gm QID if there are no contraindications. If acetaminophen lacks efficacy, there is no point continuing with it.
    0. Topical agents available include capsaicin and diclofenac

- Capsaicin is applied 3-4x / day, and it can take up to 4 weeks for maximum effect. Treatment is often limited by tingling, burning and pain. It can be considered for knee osteoarthritis. It is not recommended for hand osteoarthritis due to a lack of evidence and increased risk of eye contamination.
- Diclofenac is applied 3-4x / day, and it can take up to 2 weeks for maximum effect
- Topical NSAIDs should be used before oral NSAIDs in patients greater than 75 yrs old and in renal impairment

3. Oral NSAIDs can be divided into two categories, non-selective and selective. There are numerous NSAIDs available in Canada. The most common nonselective NSAIDs used in joint disorders are ibuprofen and naproxen, and celecoxib is the most common selective NSAID used.

- NSAIDs can cause hypertension, edema, MI, stroke, renal impairment, GI tract ulcer, perforation, and bleeding. Before initiating treatment, it is essential to assess your patients risk of CV, GI and renal complications. Key factors to consider include:
  - Diabetes
  - Alcoholic liver disease
  - Pelvic ulcer disease/GI bleed
  - Anticoagulants
  - Oral steroids
  - ACEI, ARB, DRI, diuretics
  - HTN
  - Renal disease

- See figure in show notes - the general concept is that more risk factors should make you think about choosing a selective vs non-selective NSAID, the addition of GI protection or an alternate therapy
- H2 antagonists and antacids will relieve symptoms of dyspepsia but will not help prevent GI complications
- Celecoxib is as effective as non-selective NSAID for hip/knee osteoarthritis, with the benefit of less gastroduodenal ulcers. It still can impact renal function.

4. Intra articular steroids can be used 3-4 times per year in weight bearing joints. Risks include joint space narrowing, joint deterioration, worsening pain, worsening function and a charcot type neuropathy.
5. Duloxetine, a serotonin and norepinephrine reuptake inhibitior, can be considered if concomitant depression, neuropathic pain or widespread pain.
6. There is conflicting evidence for the benefit of glucosamine and chondroitin. It is not recommended in guidelines, but given its good safety profile, a trial for patients with mild to moderate OA, is reasonable as evidence, both Positive and Negative, vary from study to study.
7. Opioids should be considered as a last resort, if patients have failed all other options or are unable to take NSAIDs. Main risks include dependence, dizziness, falls and constipation.

Key treatment points for rheumatoid arthritis include:

1. All patients with RA should be on a DMARD

    - DMARDs have a delayed onset of action of 8-12 weeks
    - Methotrexate is the preferred first choice DMARD
    - Side effects: GI upset, transaminitis, myelosuppression, stomatitis
    - Rarely, patients may develop liver toxicity or pneumonitis
    - Alternative traditional DMARDs include hydroxychloroquin, sulfasalazine and leflunomide
    - Newer DMARDs include the biologics agents, such as anti-TNF agents, abatacept, tocilizumab and rituximab

2. NSAIDS decrease inflammation but do NOT change outcomes. They can be used as 'bridging' therapy while waiting for DMARDs to take effect.

3. Smoking cessation should be recommended for all patients with rheumatoid arthritis. Smoking causes more severe disease, and disease onset occurs earlier. There is greater radiologic progression compared to non-smokers.

Next we will move on to ankylosing spondylitis. Key points are:

1. NSAIDs are first line
2. Glucocorticoids and conventional DMARDs are NOT recommended for predominant axial involvement
3. Biological DMARDs (TNFi and IL-17 inhibitors) can be used in patients with high disease activity or failure/contraindication to NSAIDs

The main treatment points for systemic lupus erythematosus are:

1. Hydroxychloroquine is recommended for all patients, if tolerated

    - It controls symptoms long term and prevents disease flares
    - Long term use is associated with retinal toxicity. Patients should see an ophthalmologist regularly as per published guidelines

2. Steroids can provide rapid symptom relief. Doses should be limited to <7.5mg/day and long-term use should be avoided

3. Immunosuppressants and biologics: choice depends on primary disease manifestation(s), patient age, childbearing potential, safety concerns, cost and prior treatment failures

4. In acute organ failure, including lupus nephritis or cerebritis, IV cyclophosphamide and mycophenolate mofietil are first line, often preceded by high dose IV glucocorticoids

For the treatment of PMR:

1. Prednisone is the mainstay of therapy.
    - Response is achieved relatively quickly at the appropriate dose
    - Prednisone 10 mg per day would be a good starting dose with the option of going as high as 20 mg per day. If the patient requires more than 20 mg per day of Prednisone per day, than you should question your diagnosis of PMR
    - Taper prednisone slowly over the course of a year
2. Relapses are common! Up to 50% of individuals will have them. Treat relapses with prednisone as well
3. Ongoing monitoring of patients for development of symptoms of GCA is essential

And last, but not least, the management of gout!

1. NSAIDs, colchicine and oral steroids are all reasonable first line options
2. Treatment should start within 24 hours of attack
3. Combination therapy is an appropriate when symptoms are severe, the attack is polyarticular or large joints are involved
4. Do NOT stop or change the dose of urate-lowering drugs during an acute attack, because symptoms may be exacerbated or prolonged
5. Urate lowering therapy CAN be started during an attack IF effective anti-inflammatory treatment has been started

OBJECTIVE 8

In assessing patients with a diagnosed rheumatologic condition, search for disease-related complications.

Extra-articular manifestations of rheumatologic conditions are quite broad. A full review of systems is essential when monitoring for complications.

A full table outlining common extra-articular manifestations can be found in our show notes. Some common ones to keep in mind are:

- Dactylitis and nail involvement with psoriatic arthritis
- Scleritis, episcleritis, mononeuritis multiplex, and carpal tunnel with rheumatoid arthritis
- Pericarditis, pleuritis, psychosis, oral ulcers, discoid, and malar rash with SLE
- Aortic regurgitation, uveitis, and enthesitis with ankylosing spondylitis
- Urethritis and cervicitis with gonococcal infections suspicious for septic joint or reactive arthritis

OBJECTIVE 9A

In patients experiencing musculoskeletal pain, actively inquire about the impact of the pain on daily life.

We all know the classic FIFE acronym used to explore illness from the patient perspective. Is there anything specific to ask patients presenting with MSK pain?

It's important to spend time exploring the disease's impact on the patient's function, as you can then tailor your management plan to target the patient's specific complaints. Joint disorders such as OA and RA are progressive and

creating realistic and achievable goals will strengthen the therapeutic relationship.

Be sure to ask about their ability to work, participate in social activities, and the effect on relationships/caregivers. Review the impact on performing activities of daily living, such as bathing, toileting, dressing, and cooking. Ask the patient about their current mobility, both in and outside the home.

Objective 9C

In patients experiencing musculoskeletal pain, arrange for community resources and aids, if necessary.

What other resources are available for patients with joint disorders?

Consider referral to OT - they can help with joint protection techniques, return to work/work accommodations, assistive devices, bracing, and suggesting appropriate footwear.

Consider referral to PT - they can help with strength, flexibility, range of motion, exercise tolerance, assistive devices, and using a cane.

The Arthritis Society Canada webpage is an excellent patient resource and can connect patients to local resources in their province.

There is also a Canadian program, GLA:D, which is an education and exercise program for knee and hip osteoarthritis. Please refer to their website for details.

https://gladcanada.ca/

We will end this episode with everyone's favorite, some clinical pearls!

Clinical Pearls

1. Abrupt onset of joint pain, complete inability to bear weight, and history of immunosuppression, IVDU, or prosthetic joint are highly suspicious for septic arthritis which is considered an emergency.
2. When comparing physical exam findings for RA and OA, key differences are:

    - OA is asymmetric, RA is symmetric
    - In the hand: OA affects 1st CMC, RA affects the MCP's (the knuckle joints)
    - In the back: OA affects cervical, thoracic and lumbar spine, RA affects cervical spine
    - In the feet: OA affects 1st MTP, RA affects all MTP

3. Although inflammatory arthropathies are usually oligo or polyarticular, they can present early on as mono arthropathies.

4. DMARDs should be started as soon as possible once rheumatoid arthritis is diagnosed. NSAIDs will NOT alter outcomes but are helpful as bridging for symptom relief until DMARDs begin to work.

5. A full review of systems is essential when monitoring patients with rheumatologic conditions for disease related complications.

6. Treatment for gout should start within 24 hours of an attack. NSAIDs, colchicine and oral steroids are all reasonable first line options. Do not stop urate lowering therapy during an attack.

7. Acetaminophen and non-pharmacologic measures should be used as initial treatment of osteoarthritis. Topical NSAID, oral NSAID and intra-articular steroids can be tried in sequence if symptoms persist.

8. Polymyalgia rheumatica is a non-articular rheumatic disease, seen in patients over the age of 50, which causes pain and stiffness in proximal muscle groups, including the shoulders, neck, hips, and thighs. Patients will have an elevated CRP, with negative RF and anti-CCP.

9. Always consider the clinical context! Joint and MSK pain are not always caused by joint pathology.

10. Diagnostic Criteria for most rheumatic conditions can be found on the American College of Rheumatology website. Avail of this resource as it can help guide you on what investigations should be done based on your differential.

11. There are several tests which can be ordered on blood work for evaluation of a rheumatic diseases with varying sensitivities and specificities. Don't be afraid to consult a resource or our rheumatology colleagues to help order and potentially interpret these tests! They are a lot to memorize!

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System	Clinical Findings
Cardiovascular	• Pericarditis • Myocarditis } SLE, RA • Aortic regurgitation - Ankylosing spondylitis • CV risk comparable to DM - RA
Pulmonary	• Pleuritis - SLE • Interstital lung disease - RA
Gastrointestinal	• IBD related symptoms such as + FOBT, diarrhea – enteropathy arthropathy, ankylosing spondylitis
HEENT	• Uveitis- Ankylosing spondylitis • Scleritis/episcleritis - RA • Oral ulcers } SLE • Nasal ulcers • Sinusitis - GPA
Neuro	• Seizures • Psychosis • Cerebritis } SLE

	• Peripheral neuropathy • Mononeuritis Multiplex • Carpal tunnel • Facial palsy – Lyme disease } RA
MSK	• Dactylitis – Psoriasis • Boutonnière and swan-neck deformities – SLE, RA • Enthesitis – Ankylosing spondylitis • Heberden's nodes (DIP joints) • Bouchard's nodes (PIP joints) } Osteoarthritis
Skin	• Discoid rash • Photosensitivity • Malar rash • Alopecia } SLE • Skin tightening - systemic sclerosis • Psoriasis • Erythema chronicum migrans – Lyme Disease • Erythema nodosum – Crohn's Disease • Pyoderma gangrenosum - IBD, RA, SLE, ankylosing spondylitis, sarcoidosis, Wegener's granulomatosis • Tophi – Gout • Nail pitting • Onycholysis } Psoriasis
Genitourinary	• Hematuria • Proteinuria • Glomerulonephritis } SLE • Urethritis or cervicitis – Gonorrhea • Prostatitis – Ankylosing Spondylitis
Hematologic	• Lymphoma – RA
Psychological	• Depression - all

Table 1. Extra-Articular Manifestations of Rheumatic Diseases

References:

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Test	Disease	Sensitivity	Specificity	Prevalence
Rheumatoid Factor (RF)	**Rheumatoid Arthritis (RA)**	**80%**	**Non-specific**	**50-90%**
	Systemic Lupus Erythematosus (SLE)			15-35%
	Sjögren's syndrome			75-95%
	Systemic Sclerosis			20-30%
Anti-CCP	**RA**	**74%**	**94-98%**	**80%**

ANA	**SLE**	**98%**	**Non-specific**	**99%**
	Antiphospholipid Antibody Syndrome (APLS)	98%		
	Drug Induced SLE			100%
	Scleroderma	97%		60-80%
	Sjögren's syndrome			96%
	RA			40%
Anti-dsDNA	SLE		95-99%	60%
Anti-Sm	SLE	Not sensitive	95-99%	20 to 30%
Anti-histone	**Drug Induced SLE**		**Highly specific**	**95%**
	SLE			30-80%
c-ANCA	Granulomatosis with Polyangiitis – GPA	Highly specific	Highly sensitive	90%
Anti-Ro	Sjögren's syndrome			75%
	SLE			40%
Anti-La	Sjögren's syndrome		Specific when Anti-Ro also positive	40%
	SLE		Specific when Anti-	10-15%

			Ro also positive	

Table 2. Laboratory Testing in Rheumatology

References:

- Mirali, S., & Seneviratne, A. (2020). *Toronto Notes - Medicine*. Toronto Notes for Medical Students, Inc.
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