-       Presentation and clinical features if appropriate

-       Differential diagnoses

-       Investigations and diagnostic work up in practice and gold standards

-       Management

-       Also include appropriate website links for information on current recommended guidelines and any other online resources you find appropriate.

# 55 JOINT DISORDER

1. In a patient presenting with joint pain, distinguish benign from serious pathology (i.e. sarcoma, septic joint): (a) by taking pertinent history (b) investigating in a timely and appropriate manner (i.e. aspirate, blood work, Xray).

* **History**: OPQRST, course, characteristics of joint involvement (pain, swelling, loss of function of joint), pattern of joint involvement (symmetrical? Mono vs poly vs non-articular? Axial vs peripheral), extra-articular features (skin, eyes, lungs, pulmonary, GI, psychiatric), ADL limitations, general health (including fever, infection, family hx, constitutional symptoms, sexual history), treatments attempted
* **Investigations**:

-***BLOODWORK***: CBC, BUN, Cr, acute phase reactants (ESR, complement C3 and C4, fibrinogen, CRP, ferritin, albumin); serology: autoantibodies (RF present in 80% of RA/50% of Sjogren’s; ANA present in 98% of SLE; anti-ds DNA in 50-70% of SLE; c-ANCA present in >90% of Wegener’s;

-***URINALYSIS*** to detect disease complications (active sediment, proteinuria)

-***SYNOVIAL FLUID ANALYSIS***: 3 C’s: cell count and differential; culture and gram stain (bacterial, mycobacteria, fungal); crystal examination

-***RADIOLOGY***: plain film for bone pathology; CT for SI joints/ankle joints/spinal canal; MRI for tendons/bursae/ligaments; US for tendons/bursae/effusions

***2. In a patient presenting with non-specific MSK pain, make a specific rheumatologic diagnosis when one is evident through hx, phys, and investigations (i.e. gout, fibromyalgia, monoarthropathy vs. polyarthropathy).*** (note: chart contains key words/phrases, and is not comprehensive)

|  |  |  |  |
| --- | --- | --- | --- |
| **Disease** | **History** | **Physical** | **Investigations** |
| **Gout** | -Acute attacks of mono or oligo arthritis (esp. knee, ankle, 1st MTP); subside within days  -Males >45yrs old; EtOH and dietary excess | -Red, swollen, tender joint  -Joint mobility may be limited (if cellulitis, joint mobility preserved)  -Tophi | -Joint aspirate: >90% aspirates show monosodium urate crystals (negative birefringence)  -punched-out/’holes in bones’ on xray |
| **Fibromyalgia** | -Chronic (at least 3 mos), diffuse pain with characteristic tender points  -F>M; ages 25-45  -Ass’d with fatigue, hyperalgesia, paresthesias | -11/18 tender points with 4kg force  -Joint examination normal | -Laboratory exams normal  -Workup includes TSH, ESR, laboratory sleep assessment |
| **OA** | -Insidious onset, gradually progressive, intermittent flare-ups  -Signs and symptoms localized to affected joints (not systemic)  -Joint pain with motion; relieved with rest; <1/2hr stiffness after immobility | -Joint line tenderness -Bony enlargement at affected joints (Bouchard’s=osteophytes at PIP; Heberden’s= at DIP)  -1st CMC involved  -Limited ROM; crepitus on passive ROM  -Mild inflammation, if any | -CBC, ESR normal  -RF, ANA negative  -Synovial fluid=non-inflammatory  -Xray: asymmetric joint space narrowing, subchondral sclerosis, intraosseous cysts, osteophytes |
| **RA** | -Symmetrical joint involvement; polyarthritis (3 or more joints) for >6wks  -Morning stiffness >30min, improving with use  -Constitutional sx i.e. myalgia, wt loss | -Joint effusions  -Tenosynovitis  -Nodules  -Deformities: Boutonniere, swan neck, claw toe, hammer toe, mallet toe, flexion contractures, ulnar deviation of MCP, radial deviation of wrist  -Bone-on-bone crepitus  -No 1st CMC involvement  -Rheumatoid nodules | -Positive serology: RF+ in 80%  -Increased ESR in 50-60%  -Platelets increased  -Hgb and WBC decreased  -Synovial fluid: leukocytosis  -Xray: demineralization, symmetric joint space narrowing, erosions of subchondral bone |
| **SLE** | -Multisystemic  -Photosensitivity, Raynaud’s, CNS symptoms (headache, seizures, psychosis, neuropathy)  ->1hr AM stiffness | -Malar rash, alopecia, cardiac and pulmonary serositis, oral/nasal ulcers | -ANA+ in 98%  -Anti-DS DNA+ in 50-70%  -Anti-SM+ in 30%  -Decreased C3, C4  -Synovial fluid: mild inflammation if +ANA  -Urinalysis: proteinuria, cellular casts  -Xray: non-destructive/nonerosive; may have osteoporosis |
| **Ankylosing Spondylitis** | -Mid and low back stiffness  -Pain at rest  -Persistent buttock pain  -Painful SI joint  -Asymmetric large joint peripheral arthritis, mostly lower limb | -Restricted ROM (decreased Schober test)  -Decreased chest wall expansion  -Acute anterior uveitis  -Aortic regurg, pericarditis | -Xray: SI joint = ‘pseudowidening’ of joint due to erosion with joint sclerosis; late change = bony fusion  -MRI/CT can detect inflammation if no changes on xray and clinically suspect Ank Spond |

DDx Monoarthropathy: infectious, inflammatory, crystal-induced (gout/CPPD), hemarthrosis, neoplasm, degenerative

DDx Polyarthropathy: infectious (lyme disease, viral ie. EBV/parvo, bacterial endocarditis, septicemia, gonococcus), post-infectious (rheumatic fever, reactive arthritis, enteric infections) , inflammatory (seropositive/seronegative)

***3. In a patient presenting with a monoarthropathy, rule out infectious causes (i.e. STDs).***

* **N. Gonorrheae** accounts for 75% of septic arthritis in young sexually active adults; S. aureus: all ages; Gram negatives: affect immunocompromised pts; S. Pneumonia: children; H. influenzae: infants, esp if not immunized
* **Investigations**: blood and urine cultures; if high index of suspicion for gonococcal infection, also C&S of endocervical/urethral/rectal/oropharyngeal; synovial fluid for CBC and diff, gram stain, culture, crystals

***4. In pts presenting with MSK pain, include referred and visceral sources of pain in the differential dx (i.e. angina, slipped capital epiphysis presenting as knee pain, neuropathic pain.***

-especially in children and elderly people, examine and consider imaging the HIP when presentation includes medial knee pain

***5. Clinically diagnose ligamentous injuries. DO NOT do an Xray examination.***

***6. In a patient presenting with joint pain, include systemic conditions in the differential (i.e. Wegener’s granulomatosis, lupus, ulcerative colitis).***

* Also consider SLE, antiphospholipid syndrome, scleroderma, Sjogren’s, polyarteritis nodosa, inflammatory bowel disease

***7. In patients with a diagnosed rheumatologic condition: (a) actively inquire about pre-existing co-morbid conditions that may modify the treatment plan (b) choose the appropriate treatment plan (i.e. no NSAIDS in patients with renal failure or peptic ulcer disease)***

* Considerations in addition to the above: renal impairment, liver disease, EtOH abuse, allergies, use of warfarin or anticoagulants, pregnancy

***8. In assessing patients with a diagnosed rheumatologic condition, search for disease-related complications (i.e. iritis)***

* Review of systems key; do ENT, lungs, cardiac, pulmonary, GI, GU, neurologic, psychiatric screening

***9. In patients experiencing MSK pain: (a) actively inquire about the impact of the pain on daily life (b) treat with appropriate doses of analgesics (c) arrange for community resources and aids (cane/splints) if necessary.***

* **Analgesics for OA**:

-Acetaminophen 4g/day, NSAIDS (oral and topical), cox-2 inhibitors, tramadol

-Corticosteroids: intra-articular injections

-intra-articular hyaluronic acid, capsaicin cream, glucosamine sulfate/chondroitin

* Arthritis Society excellent resource

***10. In patients with RA, start treatment with DMARDs within an appropriate time interval.***

* Early intervention has greatest impact on outcome. Analgesics, NSAIDs, and steroids do not alter the course of RA; however, they should be used for symptomatic relief. Consider early referral to rheumatologist.
* In **mild and early** disease: DMARDs for all patients whose disease does not remit after **2 to 3 months** with use of NSAIDs alone. First lines: hydroxychloroquine (200mg BID, adjusted if weight <61kg) or sulfasalazine (1000mg BID to TID). If after 6mos suboptimal, then consider other DMARDs
* **Moderate to severe disease**: **Immediate** treatment with DMARDs. Consider methotrexate or leflunomide; consider combination therapy; consider Remicade or Eternacept.
* DMARDs have a delayed onset of action (8-12wks)

**REFERENCES:** Toronto Notes 2008**,** Up to Date

**Guidelines/Treatment for Specific Entities**

1) **Osteoarthritis**

**Diagnosis**: Clinical, as per above chart

**Management:**

Non-pharmacologic: Patient education, Self-management programs (e.g., Arthritis Foundation Self-Management Program), Weight loss (if overweight), Aerobic exercise programs especially water-based, acupuncture, Physical therapy, Range-of-motion exercises, Muscle-strengthening exercises, Assistive devices for ambulation, Patellar taping, Appropriate footwear, Lateral-wedged insoles (for genu varum), Bracing, Occupational therapy, Joint protection (ie. hip protectors) and energy conservation, Assistive devices for activities of daily living

Pharmacologic: see item #9 above

**Guidelines:** BC Guidelines http://www.bcguidelines.ca/guideline\_osteoarthritis.html

2) **Rheumatoid Arthritis**

**Diagnostic Criteria:** RA diagnosed if 4 or more of the following 7 criteria present (American Rheumatism Association, 1987)

1. Morning stiffness Joint stiffness>1hour for >6 weeks

2. Arthritis of three or more joint areas At least 3active joints for >6 weeks; commonly involved

joints are PIp, MCp, wrist. elbow, knee, ankle, MTP

3. Arthritis of hand joints At least one active joint in wrist, MCP or PIP for >6 weeks

4. Symmetric arthritis Bilateral involvement of PIp, MCp, or MTP for >6 weeks

5. Rheumatoid nodules Subcutaneous nodules over bony prominences, extensor

surfaces or in juxta·articular regions

6. Serum RF Found in 60-80% of RA patients

7. Radiographic changes Erosions or periarticular osteopenia, likely to see earliest

changes at ulnar styloid, 2nd and 3rd MCP and PIP joints

**Management:** early stages with hydroxychloroquine/sulfasalazine; mod-severe: methotrexate, leflunomide, azathioprine, gold; severe: anti-TNF drugs, cyclosporine

-if confident of diagnosis, do baseline bloodwork (CBC, liver/renal Ix, screen Hep B, Hep C, HIV) and start sulfasalazine + MTX (provided patient not pregnant and doesn’t have other contraindications), add prednisone while awaiting specialist consult for severe symptoms

-need to do CXR to monitor for latent TB if starting anti-TNF drugs (if fail MTX/leflunomide/etc.)

-surgery for multiple DMARD failure, intractable pain, structural joint damage (can include joint replacement, fusion; surgery truly a last resort in RA patients)

**Guidelines:** <http://www.bcguidelines.ca/guideline_ra.html>; http://rheum.ca/en/publications/treatment\_recommendations\_for\_ra

3) **Gout**

**Management** of acute attack: NSAIDs plus/minus colchicine 0.6mg po up to tid (as tolerated by GI side effects). If can’t tolerate NSAIDS (ie. renal failure/GI ulcer), can substitute oral steroid for NSAID.

**Long term Management** (prevention of recurrence): if repeated attacks, measure serum uric acid and, if elevated, Rx Allopurinol (or new uric acid-lowering drug Febuxostat). Combine first 3-6 months of uric acid-lowering med (allopurinol/febuxostat) with colchicine 0.6mg po od and then d/c colchicine. (Colchicine prevents recurrences while on initial months of uric acid-lowering drug.)

**Guidelines:** Laubsher T, Dumont Z, Regier L, Jensen B. Taking the stress out of managing gout. Canadian Family Physician *2009;55(12): 1209-1212.*

4) **SLE**

**Diagnostic Criteria**: **Diagnostic Criteria of SLE: 4 or more of 11 must be present serially or**

**simultaneously (American College of Rheumatology, 1997 update)**

**Clinical (7 criteria)**

Malar rash - Classic "butterfly rash; sparing of nasolabial folds, no scarring

Discoid rash – May cause scarring due to invasion of basement membrane

Photosensitivity - Skin rash in reaction to sunlight

Oral/nasal ulcers - Usually painless

Arthritis - Symmetric, involving <2 small or large peripheral joints, non-erosive

Serositis - Pleuritis or pericarditis

Neurologic disorder - Seizures or psychosis

**Laboratory (4 criteria)**

Renal disorder - Proteinuria 1>0,5 g/day or 3+; cellular casts (RBC, Hb, granular, tubular, mixed)

Hematologic disorder- Hemolytic anemia, leukopenia, lymphopenia, thromboctyopenia

Immunologic disorder - Anti-dsDNA Ab, anti-Sm Ab, Antiphospholipid antibodies based on the finding of serum anticardiolipin Ab,

lupus anticoagulant, or false positive VDRL

Antinuclear antibody lANA) Most sensitive test (98%)

**Management:** treatment directed at symptoms ie. NSAIDs for arthritis, topical steroids for rash, high dose oral/IV steroids for serositis/nephritis, hydroxychloroquine for MSK/derm involvement; MTX/anti-TNF drugs, cyclophosphamide for severe organ involvement

-avoid sulfonamides, estrogens (can exacerbate symptoms); smoking cessation

**Guidelines: none available**

5) **Ankylosing Spondylitis**

**Diagnosis**: see above chart

**Management:** NSAIDS, exercises 🡪 opioids if needed 🡪 anti-TNF-alpha drugs or sulfasalzine (only DMARD of use in ank spond)

**Guidelines:** none available

6) **Fibromyalgia**

**Diagnostic Criteria (2):** (1) 3 months widespread pain (ie. pain in both sides of the body; pain above and below the waist; axial skeletal pain such as cervical spine, anterior chest, thoracic spine or low back) and (2) pain in 11/18 tender points

**Management:**

Non pharmacologic: Physical therapy, exercise and fitness program, stress-relief methods (including massage/relaxation techniques), cognitive behavioural therapy, well-balanced diet, avoid caffeine, sleep hygiene, acupressure/acupuncture

Pharmacologic: antidepressent esp SNRI (duloxetine), anticonvulsants (ie. gabapentin/pregabalin), muscle relaxants, NSAIDs, sleep aids

**Guidelines:** http://fm-cfs.ca/resources-p.html