LECTURE - MONO-ARTHRITIS

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1. SIGNS AND SYMPTOMS OF MUSCULOSKELETAL DISORDERS

A common presenting complaint in rheumatic disorders is swelling and pain in joints. One of the main challenges is to try and establish whether or not one is dealing with a primary rheumatic disorder or whether the symptom is part of another underlying disease. Early on, precise diagnosis may be impossible and only with the passage of time does the clinical picture become clear. Never the less every attempt must be made to reach diagnosis and here the clinical history and the pattern of joint involvement are the most valuable guides.

(a) HISTORY:

(i) The patients AGE helps in listing specific diseases

*A prepubertal patient require careful evaluation for traumatic conditions, congenital defects such as slipped capital epiphysis, and hip dysplasia.
A young sexually active person may have gonococcal arthritis or a reactive arthritis.
An elderly patient with hip pain is more likely to be osteoarthritis.

*The patients age also helps <u>rule out</u> specific diseases. For example, one rarely thinks of crystal arthropathies, OA or gonococcal disease in prepubertal children.

(ii) SEX, like age is sometimes helpful in listing diagnostic possibilities. Gout is less common but can occur in females (20-40)

(iii) PATTERN of joint involvement-DIP joints; Spine;

(iv) ONSETof the disorder.

(v) PROGRESSION of arthritis.

(vi)ASSOCIATED SYSTEMIC FEATURES- Fever, loss of weight, rashes, conjuctivitis, mouth ulcers

MONOARTICULAR ARTHRITIS

Inflammation/arthritis in a single joint. The underlying causes of monoarthritis can be divided into 2 groups: Inflammatory and mechanical:

INFLAMMATORY	NON-INFLAMMATORY
Crystal-induced (monosodium urate, calcium pyrophosphate, hydroxy-apatite)	Haemophilia/Haemathrosis
Infection (bacteria, fungi, mycobacterium)	Osteonecrosis (SONK)
Systemic disease presenting with monoarticular disease eg psoriatic arthritis, reactive, RA	Tumor (PVNS, giant cell tumour, osteochondroma)
	Osteoarthritis
	Trauma, internal derangement, fracture

MONARTHRITIS IS INFECTION UNTIL PROVEN OTHERWISE

DIFFERENTIAL DIAGNOSIS

Crystals – gout, pyrophosphate, hydroxyapatite
Haemophilia
Infection- Bacterial, viral, fungal
Trauma- haemathrosis, , OA, osteonecrosis
Synovial/bone tumours

WORK-UP

History. Determine course and duration of symptoms *eg* Bacterial infection tends to increase in severity. Osteoarthritis waxes and wanes, previous episodes suggests gout. Be suspicious of swelling in prosthethic joints.

Monoarticular arthritis is occassionally the first symptom of poly-articular disease, such as Reiters syndrome or other reactive arthritis, IBD, psoriatic arthritis or RA. A history of fever, chills, tick bites, sexual risk factors, IVI drug use, and travel outside the country, contribute clues to infectious causes. Symptoms such as rash, diarrheoa, urethritis or uveitis suggest reactive arthritis.

Physical examination. Distinguish arthritis, which involves the articular space from problems in periarticular areas, such as bursitis, tendonitis, or cellulitis. Arthralgia is painful joints without any features of inflammation. Look for extra-articular signs that may provide clues eg mouth ulcers- Bechets, Reiters, SLE; psoriasis; erythema nodosum; heart murmurs; pleural effusions etc.

Investigations.

(a) Synovial fluid analysis. The work up of acute monoarticular arthritis even with out fever usually requires aspiration of the joint in almost every patient and it is obligatory if infection is suspected.

Gross examination

Total leukocyte and differential count.
Normally <200WBC/mm^3 most of which are mononuclear cells; <2000 WBC/mm^3 in synovial fluid is considered "non-inflammatory eg OA; Synovial fluid with WBC> 2000 cells is considered inflammatory; SF with WCC > 50,000 are considered septic. Most are polymorphs.

Cultures, gram stain

Examination for crystals.
Monosodium urate are needle shaped and calcium pyrophosphate (are usually rods, squares, or rhomboids. CPPD). Polarised light confirms the nature of these crystals.

(b) Culture and gram stain of blood, skin, urethra, cervix, urine. Test for HIV and Lyme antibodies.

(c) Radiographs. Xray findings are typically unremarkable in most patients with acute arthritis other then showing soft tissue swelling. However may show fracture, osteonecrosis, chondrocalcinosis, erosion, tumour,.

(**d**) **Synovial biopsy**. Biopsy during arthroscopy may be critical in patients with monoarthropathy that remains undiagnosed. Culture of tissue may yield mycobacterial or fungal growth. Biopsies can identify infiltrative lesions such as amyloid, sarcoid, pigmented villonodular synovitis or tumour.

2. SPECIFIC TYPES OF MONO-ARTHRITIS

Infection

Between 80% and 90% of non-gonococcal bacterial infections are mono-articular. Most joint infections develop from haematogenous spread. The discovery of a primary site of infection can be an important clue to the infectious agent involved. By far the most common agents are gram positive aerobes (approximately 80%), with *Staphylococcus aureus* accounting for 60%. Gram negative bacteria account for 18% of infections, and anaerobes are increasingly common causes as a result of parenteral drug use and the rising number of immunocompromised hosts. Anaerobic infections are also more common in patients who have wounds of an extremity or gastrointestinal cancers.

N. gonorrhoeoa is still a common cause of septic arthritis. It is often preceded by a migratory tendinitis or arthritis. Mycobacterium infection may cause mono-arthritis or may involve several joints. Atypical mycobacterial infections can involve the synovium and should be considered in the differential diagnosis, especially in immunocompromised hosts and in patients whose joints have been injected frequently with corticosteroids. Fungal arthritis is usually indolent, but cases of acute monarthritis due to blastomycosis or Candida species have been reported. Acute mono-arthritis associated with herpes simplex virus, Coxsackie B, HIV, parvovirus, and other viruses has also been described (1,2).

Crystal-Induced Arthritis

Gout, which is caused by monosodium urate crystals, is the most common type of inflammatory monarthritis. Typically gout involves the first metatarsophalangeal (MTP) joint, ankle, midfoot, or knee. However acute attacks of gout can occur in any joint. Later attacks may be monarticular or polyarticular. Accompanying fever although less common with monarticular than with polyarticular gout, can mimic infection.

Calcium pyrophosphate (CPPD) crystals can cause mono-arthritis that is clinically indistinguishable from gout and thus is often called <u>pseudo-gout</u>. Pseudogout is most common in the knee and wrist, but it has been reported in a variety of other joints, including the first MTP joint. Among other crystals known to cause acute mono-arthritis are hydroxy-apatite, calcium oxalate, and lipid crystals.

Osteoarthritis, Osteonecrosis, Trauma

Although osteoarthritis is primarily a chronic and slowly progressive disease, it may present with suddenly worsening pain and swelling in a single joint. New pain in the knee is often due to an effusion as a result of overuse or minor trauma. Spontaneous osteonecrosis, especially of the knee, is seen in elderly patients and can lead to pain in a single joint with or without effusion (3). Trauma to a joint leading to internal derangement, hemarthrosis, or fracture can also lead to mono-articular disease. Penetrating injuries from thorns, wood fragments, or other foreign materials can cause mono-arthritis (4).

Hemarthrosis

The most common causes of hemarthrosis, or bleeding into a joint, are clotting abnormalities due to anticoagulant therapy or congenital disorders such as hemophilia. Hemarthrosis can also result from scurvy. Fracture of the joint should always be considered in patients with hemarthrosis, especially if the synovial fluid is bloody and contains fat.

Systemic Rheumatic Diseases

Many systemic diseases may present as acute monarticular arthritis, but this is decidedly uncommon and should not be emphasized in the differential diagnosis. RA, SLE, arthritis of inflammatory bowel disease, psoriatic arthritis, Behcet's disease, Reiters syndrome, and other forms of reactive arthritis can all begin as acute monarthritis. Other causes include sarcoidosis, serum sickness, hepatitis, hyperlipidemias, and malignancies.

Persistence in evaluating patients for underlying systemic diseases can sometimes lead to an early diagnosis of systemic disease.

In a substantial number of patients with synovial fluid findings indicative of inflammatory arthritis, the cause cannot be determined. Many of these patients have transient monarthritis with no recurrences. Guidelines for the initial evaluation of patients with acute musculoskeletal symptoms have been published and include aspects of evaluation of monarthropathy (5) .

REFERENCES

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3. Lotke PA, Becker ML: Osteonecrosis of the knee. Orthop Clin North Am 16:797-808, 1985

4 Olenginski Tp, Bush DC, Harrington TM: Plant thorn synovitis: an uncommon cause of monarthritis. Sem Arth Rheum 21:4046, 1991

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CASE 1:

JL, 26, Policeman

P/S Severe ankle pain 1 week, getting worse

HPI Well until recently. One year old son had URTI

P/H- Unremarkable

O/E- Acute monoarticular arthitis Nil else

Admitted for Investigation

Dx: Lofgrens Syndrome;
Sarcoidosis, erythema nodosum and acute arthritis