

ORTHOPAEDICS



FOR PRIMARY
HEALTH CARE



LION

LEARNING INNOVATION VIA
ORTHOPAEDIC NETWORKS

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Multiple painful joints

by Jeannie McCaul

Learning objectives

1. Evaluate a patient with multiple joint pains (polyarthralgia).
2. Formulate a description of an X-ray.
3. Develop a differential diagnosis of polyarthralgia.
4. Outline a basic initial non-surgical management plan.
5. Understand the indications and options for surgical management.

Introduction

Polyarticular joint pain is a common complaint seen at primary care facilities. There is a wide differential diagnosis to the cause of polyarticular joint pain making the diagnostic process challenging.

However, a comprehensive history and physical exam help point towards the most likely cause of the complaint.

In this chapter, a general approach to the differential diagnosis of polyarticular pain and the management thereof is provided. A case study is provided to demonstrate an approach to a patient complaining of multiple painful joints. Assessment

History

Ask for important components in the history such as:

Duration

How long has the pain been there?

Progression

Is it getting better or worse or the same? Are the joints mostly painful and stiff in the morning (suggestive of autoimmune inflammatory arthritis) or painful after exercise (suggestive of osteoarthritis)

Associations

Is there any rash, synovitis or effusion? Is there any fever indicative of an infection? Is there weight-loss, night sweats or loss of appetite suggestive of TB.

Etiology

History of trauma? Symptoms suggestive of infection?

Previous or other joint pains? Previous medical history?

Previous surgical history?

Examination

Structure your examination into inspection, palpation and movement.

Look

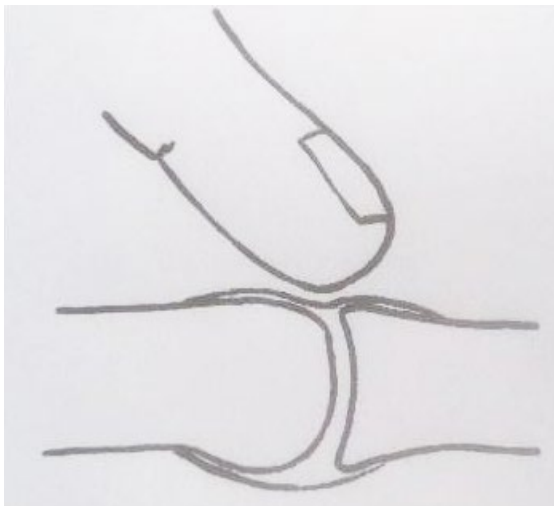
- Site: Determine location of the joint pains – which joints?
- Any erythema, scars or sinuses?
- Any swelling or bony deformity noted?

Feel

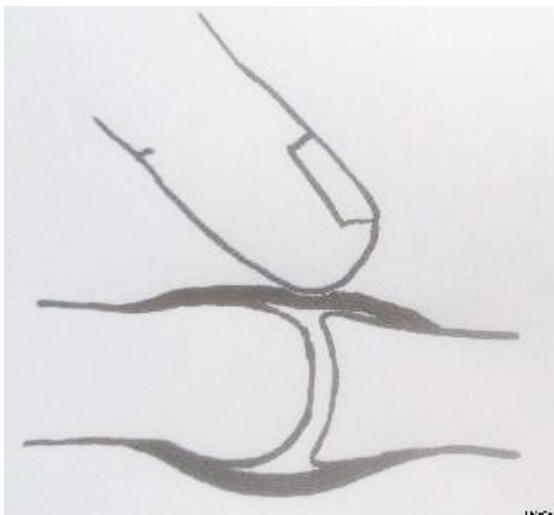
- Temperature: Does the overlying skin feel warm?
- Is there synovitis? See figure below
- Is there an effusion? In the knee, for a small effusion, do the swipe test, for a large effusion, the patellar tap test.
- Tenderness: Is it tender? Is it joint line pain or enthesitis (pain at insertion of ligaments)?

Move

- What is the range of movement of the joint in degrees, both active and passive? If less than 10° or 20° and passive movement causes extreme pain, consider bacterial arthritis. If mechanically decreased range, consider osteoarthritis.
- Is there crepitus on movement?



No synovitis: joint space is easily palpable through thin capsule and synovium



Synovitis: joint space is not easily palpable due to thickened synovium: feels like a blanket

System examination

- General examination.
- Identify any other joints involve

Special investigations

Plain film X-rays

On X-rays you will gain important information (see chapter on approach to orthopaedic X-ray).



Specifically look for:

- Identify view, patient and date
- Is the patient skeletally mature?
- Joint involved
- Is there markedly reduced joint space without many osteophytes? And is there periarticular osteopaenia? – suggestive of rheumatoid arthritis.
- Is the joint space narrowing accompanied by osteophytes, subchondral cysts and sclerosis? – suggestive of osteoarthritis
- Are there “rat bite” erosions on the edges of the joint? – suggestive of gout.

Blood tests

If suspecting an autoimmune or inflammatory disorder:

- ESR, CRP, RF, ANA, anti-CCP
- Consider anti ds-DNA if suspicious of SLE, or HLA-B27 if suspicious of ankylosing spondylitis
- If suspecting an infection:
- FBC, ESR, CRP
- UE especially if patient ill
- Consider viral studies such as hepatitis, parvovirus.
- If suspecting a systemic disorder, especially endocrine
- LFTs, thyroid studies, CMP,
- albumin, ALP

Joint aspiration

- Should be performed with sterile technique
- Inspect and record nature of aspirate: Frank pus? Keep NPO and refer to orthopaedic surgeon for arthrotomy in theatre. Straw coloured? Consider TB. Frank blood? Consider trauma or haemophilia.
- Send for: MC/S, TB GeneXpert PCR, TB culture, crystals

Synovial biopsy

In cases of diagnostic dilemma, a synovial sample can be taken by an orthopaedic surgeon in theatre and sent for histology, TB PCR and culture, MC/S.

Differential diagnoses

The differential diagnoses of polyarthralgia are wide. History, examination and special investigations will help identify the cause.

More than 6 weeks?

- Could be a systemic rheumatic condition such as: rheumatoid arthritis, SLE, Sjogren's syndrome, sarcoidosis etc.
- Consider osteoarthritis
- Consider amyloidosis (rare)

> 6 weeks and also involving the spine?

- Could be a spondyloarthropathy such as: ankylosing spondylitis, psoriatic arthritis, IBD etc. Juvenile idiopathic arthritis and reactive arthritis can also involve spine
- Consider osteoarthritis

Does it relapse and remit (come and go)?

- Consider gout or pseudogout (crystals in the joint aspirate)
- Consider haemophilia in a young male (recurrent bleeds into joints)

Is it a short history and an ill patient?

- Consider infection: multiple bacterial arthritis (rare), gonococcal arthritis, viral
- Tuberculosis, especially if a slightly longer history or insidious onset

- Consider polyarthralgia accompanying a flu-like illness if no synovitis

Does the patient have a rash or vasculitis?

Consider Henoch-Schoenlein purpura, Polyarteritis nodosa, granulomatosis

Does the patient have an endocrine disorder?

Hypo or hyperthyroidism or hyperparathyroidism that can cause joint pain

Does the patient have no synovitis or effusion, but tender trigger points?

Consider fibromyalgia

Management

The management is directed to the cause:

- Osteoarthritis: conservative management as above, refer to orthopaedic surgeon to consider arthroplasty or arthrodesis if it requires surgical management.
- Inflammatory or autoimmune: Refer to rheumatologist to confirm diagnosis and consider DMARDS. See the ACPA 2010 diagnostic criteria for rheumatoid arthritis.
- Systemic or endocrine: Treat supportively and refer to medicine or endocrinologist to consider targeted treatment
- Infective: identify the organism and treat according to sensitivities. If bacterial, septic arthritis washout in theatre is mandatory.

Case presentation

A 70-year-old obese female patient presents complaining of multiple painful joints. She localizes the pain to both hips, both knees and her right elbow. She has had no recent trauma and has no comorbidities, and no family history of arthritis. She states that the pain started insidiously about one year ago and has gradually worsened. The pain is worse when the weather is cold, on movement and especially in the evening at the end of an active day. Examination reveals swollen knees with mild synovitis, small effusions and palpable crepitus but

full stable range of movement. Passive rotation of both hips reveals groin pain and limited range of movement, with fixed flexion contractures of 30°. Her right elbow similarly has decreased range of movement (10° to 100°), synovitis and crepitus. There is no neurovascular deficit.



Figure 1: Antero-posterior (AP) X-ray of the patient's left hip shows markedly narrowed joint space, subchondral cysts and sclerosis, and osteophytes

Blood tests

A rheumatic screen is negative.

Differential diagnosis

See list at end of chapter. After correlation with patient's history and examination findings and negative blood results, the diagnosis of osteoarthritis is made.

Management

ELMPOPI:

E: Education: patient is informed about the nature of the condition – a form of degeneration of the articular cartilage.

LM: Lifestyle Modification: A discussion is held with the patient to see if avoiding activities that exacerbate the pain (such as long walks, sitting on low chairs) is an option. Weight loss is advised, and a dietician is consulted.

P: Physiotherapy: Weight loss exercises that avoid causing more joint pain are commenced. Other specific exercises include dynamic stabilization of the knees and gait training. A walking aid (crutch or walking stick) is offered to the patient, and she is educated on its use.

O: Occupational therapy: The OT provides an assistive device to allow the patient to open tight jars and taps without hurting her elbow. They discuss and consider hinged knee braces should her knees feel unstable in the future.

P: Pills: Paracetamol, NSAIDs and Tramadol are prescribed for the patient to use as required.

I: Injections: After three months of the above treatment the patient requests an injection. A LASI (local anesthetic and steroid injection) is performed with aseptic technique into both knees. The patient reports transient improvement of the symptoms.

Surgical management

After six months of adequate therapy as above and successful weight loss to a BMI of below 40, the patient is still not coping with the pain in her lower limbs. A careful history and repeat examination reveal that the left hip joint is causing the most pain, and she is scheduled for a total hip replacement. The surgeon opts for a metal-on-polyethylene bearing surface and an uncemented cup and stem. In this case a single screw was used to secure the acetabulum sufficiently. The operation is successful, and she elects to continue non-operative treatment for her other joints for the time being.

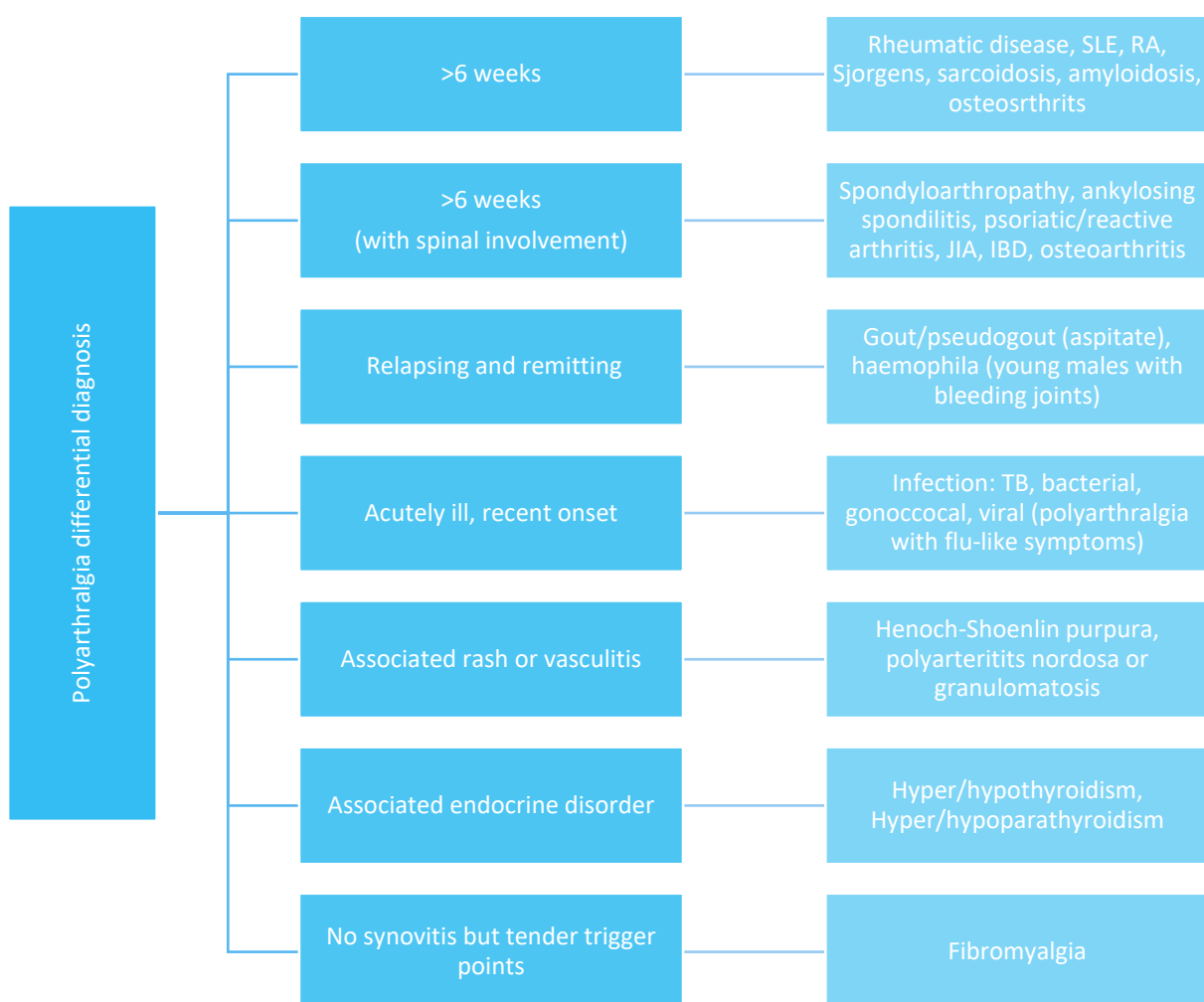
Essential takeaways

Polyarticular arthritis has multiple causes but narrowing down the differential diagnosis is primarily through history taking and examination.

- Are there signs of acute infection?
- Are there constitutional symptoms?
- What is the timeline?
- What is the pattern of joint involvement?
- Is this inflammatory or mechanical?
- Are there associated symptoms?

After answering these questions, appropriate investigations including serologic, tissue or imaging studies can be added to further narrow your differential diagnosis.

Below is an attached diagram to aid in forming a differential diagnosis.



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Assessment

Mrs Pietersen is a 55-year-old woman with an extensive pack year smoking history. She presents to you complaining of two months of swelling, stiffness and pain in her knuckles. The stiffness is worse in the morning and gets better throughout the day. On examination you palpate symmetrical synovitis of her MCPs and PIPs. What is the most likely diagnosis?

- A. Psoriatic arthritis
- B. Septic arthritis
- C. Osteoarthritis
- D. Rheumatoid arthritis

D. Rheumatoid arthritis classically presents clinically with symmetrical pain, stiffness and swelling of the PIPs and MPJs. As it is an inflammatory arthritis, the associated stiffness is commonly worse in the mornings and improves with movement as the day progresses. A risk factor is smoking

Which X-ray finding is most specific for Osteoarthritis?

- A. Joint space narrowing
- B. Osteophytes
- C. Subchondral cysts
- D. "Rat bite" erosions

A. Joint space narrowing is common in many forms of arthritis, subchondral cysts are also seen in late-stage rheumatoid arthritis, "rat bite" lesions are seen in gout.

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About the book

Informed by experts: Most patients with orthopaedic pathology in low to middle-income countries are treated by non-specialists. This book was based on a modified Delphi consensus study* with experts from Africa, Europe, and North America to provide guidance to these health care workers. Knowledge topics, skills, and cases concerning orthopaedic trauma and infection were prioritised. Acute primary care for fractures and dislocations ranked high. Furthermore, the diagnosis and the treatment of conditions not requiring specialist referral were prioritised.

** Held et al. Topics, Skills, and Cases for an Undergraduate Musculoskeletal Curriculum in Southern Africa: A Consensus from Local and International Experts. JBJS. 2020 Feb 5;102(3):e10.*

The Lion

The Learning Innovation via Orthopaedic Network (LION) aims to improve learning and teaching in orthopaedics in Southern Africa and around the world. These authors have contributed the individual chapters and are mostly orthopaedic surgeons and trainees in Southern Africa who have experience with local orthopaedic pathology and treatment modalities but also in medical education of undergraduate students and primary care physicians. To centre this book around our students, iterative rounds of revising and updating the individual chapters are ongoing, to eliminate expert blind spots and create transformation of knowledge.

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