

CHAPTER

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Monoarthritis – How and How Much to Investigate?

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Mono-arthritis represents a diagnostic challenge to even the most experienced clinician, it is almost always possible to identify patients who require vigorous evaluation and treatment to prevent rapid disease progression, such as those with suspected septic arthritis.

Joint pain can be the result of abnormalities in the joint itself, adjacent bone, surrounding ligaments, tendons, bursal, or soft tissues. Arthritis involving a diarthrodial joint causes stiffness, reduced range of motion, and pain during normal use.

The patient history and physical examination are essential in determining the cause of the arthritis. Inflammatory forms of arthritis are characterized by stiffness of the joint, most noticeable in the morning, improves with motion often associated with systemic symptoms, such as fever or malaise. Joint pain due to mechanical factors usually worsens with activities, improves with rest, and is not associated with systemic symptoms.

During physical examination, it is important to compare the abnormalities (swelling, warmth, redness) with findings in the contralateral joint.

Etiology of Acute Monoarthritis

Acute monoarthritis in adults can have many causes (Table 1), but crystals, trauma, and infection are the most common. A prospective, three-year study

found that the most important risk factors for septic arthritis are a prosthetic hip or knee joint, skin infection, joint surgery and rheumatoid arthritis; age greater than 80 years, and diabetes mellitus. Intravenous drug use and large-vein catheterization are predisposing factors for sepsis in unusual joints (sterno-clavicular).

Gonococcal arthritis is the most common type of nontraumatic acute monoarthritis in young, sexually active persons in the United States. It is there to four times more common in women than men. Monoarticular inflammation can be the initial manifestation of human immunodeficiency virus (HIV) infection.

Many types of crystals can trigger acute monoarthritis, but mono-sodium urate and calcium pyrophosphate oxalate, apatite, and lipid crystals also elicit acute monoarthritis.

Diagnostic Studies

Arthrocentesis is required in most patients with monoarthritis and is mandatory if infection is suspected. Superimposed cellulitis is a relative contraindication to arthrocentesis. The patients who are taking sarfarin, sterile tubes should be used for culture. Synovial fluid cultures are more likely to be positive in patients with nongonococcal arthritis than in those with gonococcal arthritis.

Synovial fluid may be categorized as noninflammatory, inflammatory or hemorrhagic, depending on the appearance and cell counts (Table – 3). Tests for HIV and Lyme disease antibodies may be obtained, if appropriate, but serologies usually are not helpful in identifying the cause of acute monoarthritis.

Blood cultures should be obtained in patients with suspected septic arthritis. cultures are positive in about 50% of non-gonococcal infections, but are

rarely positive (about 10%) in gonococcal infection.

Conclusion

Common pitfalls in the diagnostic approach to acute monoarthritis (Table-4) must be avoided, and the rough guidelines on synovial fluid classification (Figure 1 and Table 3) should not be interpreted too rigidly. If infection is suspected, urgent consultation and culture should be obtained, and intravenous antibiotics should be administered to prevent rapid joint destruction.

Figure 1 : Diagnosing Acute Monoarthritis

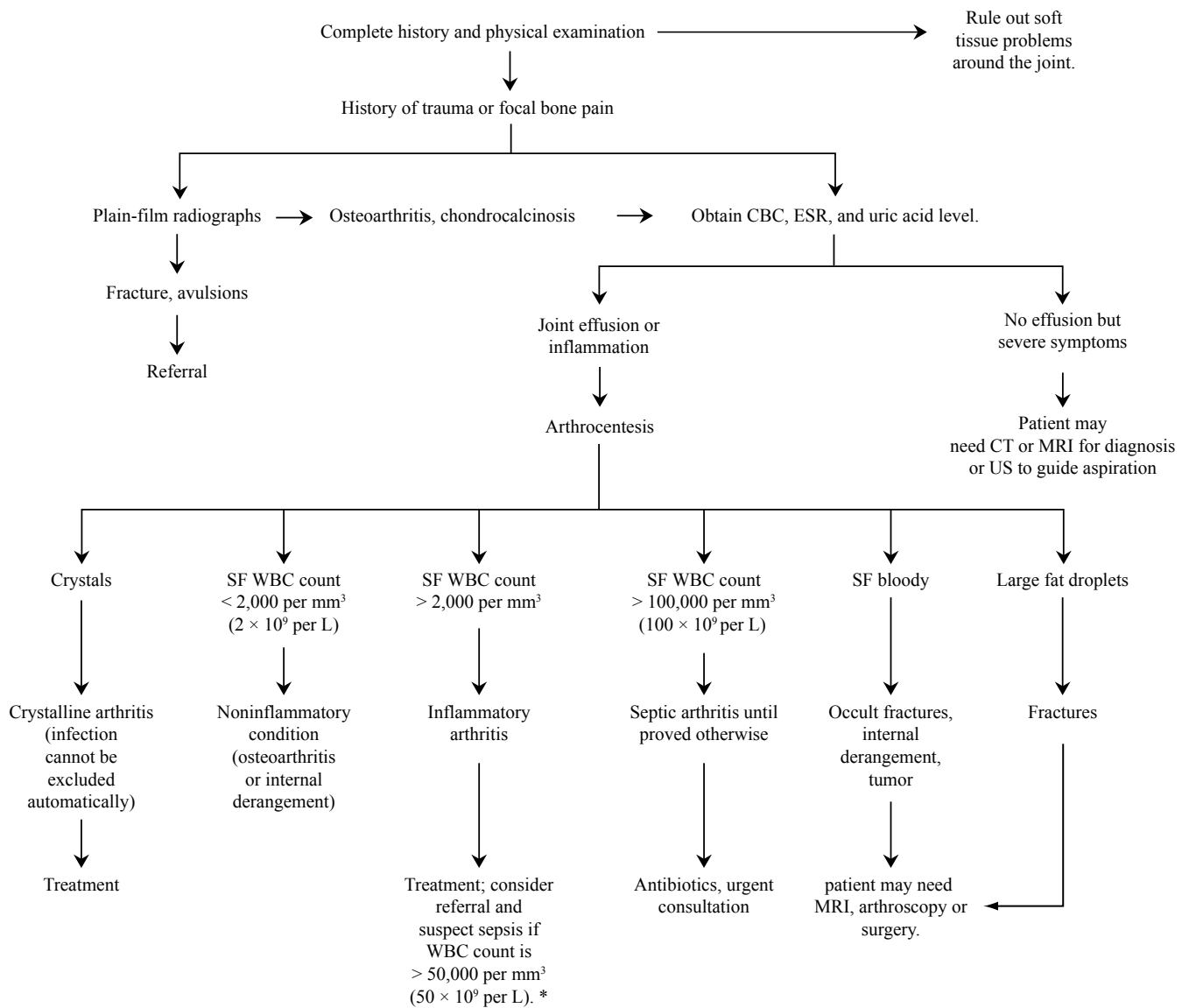


Table 1 : Etiology of Acute Monoarthritis

Common causes	Less common causes	Rare causes
Avascular necrosis of bone	Bone malignancies	Amyloidosis
Crystals	Bowel-disease-associated arthritis	Behçet's syndrome
Monosodium urate	Hemoglobinopathies	Familial Mediterranean fever
Calcium pyrophosphate dehydrate	Juvenile rheumatoid arthritis	Foreign-body synovitis
Apatite	Loose body	Hypertrophic pulmonary osteoarthritis
Calcium oxalate	Psoriatic arthritis	Intermittent hydrarthrosis
Hemarthrosis	Rheumatoid arthritis	Pigmented villonodular synovitis
Infectious arthritis	Reactive arthritis	Relapsing polychondritis
Bacteria	Sarcoidosis	Still's disease
Fungi		Synovioma
Mycobacteria		Synovial metastasis
Viruses		Vasculitic syndromes
Lyme disease		
Internal derangement		
Osteoarthritis		
Osteomyelitis		
Overuse		
Trauma		

Table 2 : Diagnostic Clues in Patients Presenting with Joint Pain

<i>Clues from history and physical examination</i>	<i>Diagnoses to consider</i>
Sudden onset of pain in seconds or minutes	Fracture, internal derangement, trauma, loose body
Onset of pain over several hours or one to two days	Infection, crystal deposition disease, other inflammatory arthritic condition
Insidious onset of pain over days to weeks	Indolent infection, osteoarthritis, infiltrative disease, tumor
Intravenous drug use, immunosuppression	Septic arthritis
Previous acute attacks in any joint, with spontaneous resolution	Crystal deposition disease, other inflammatory arthritic condition
Recent prolonged course of corticosteroid therapy	Infection, avascular necrosis
Coagulopathy use of anticoagulants	Hemarthrosis
Urethritis, conjunctivitis, diarrhea, and rash	Reactive arthritis
Psoriatic patches or nail changes such as pitting	Psoriatic arthritis
Use of diuretics, presence of tophi, history of renal stones or alcoholic binges	Gout
Eye inflammation, low back pain	Ankylosing spondylitis
Young adulthood, migratory polyarthralgias, inflammation of the tendon sheaths of hands and feet, dermatitis	Gonococcal arthritis
Hilar adenopathy, erythema nodosum	Sarcoidosis

Table 3 : Categorization of Synovial Fluid, with Associated Conditions

Noninflammatory : < 2,000 WBC per mm ³ (2 × 10 ⁹ per L)	Inflammatory : > 2,000 WBC per mm ³
Osteoarthritis	Septic arthritis*
Trauma	Crystal-induced monoarthritis (e.g., gout, pseudogout)
Avascular necrosis	Rheumatoid arthritis
Charcot's arthropathy	Spondyloarthropathy
Hemochromatosis	Systemic lupus erythematosus
Pigmented villonodular synovitis	Juvenile rheumatoid arthritis, Lyme disease, Other crystalline arthritides

WBC = white blood cell

Table 4 : Common Errors in Diagnosing Acute Monoarthritis

<i>Errors</i>	<i>Reality</i>
The problem is in the joint, because the patient complaints of "joint pain"	The soft tissues around the joint can be the source of the pain (e.g. olecranon bursitis of the elbow, prepatellar bursitis of the knee).
Crystal-proven diagnosis of gout or pseudogout rules out infection.	Crystals can be present in a septic joint.
The presence of fever is useful in distinguishing infectious causes from other causes	Fever may be absent in patients with infectious monoarthritis but can be a presenting feature in acute attacks of gout or pseudogout. Fever may occur for other reasons in certain patients (e.g., the immunocompromised).
A normal serum uric acid level makes gout a less likely diagnosis	Serum uric acid levels often are lowered in patients with acute gout. conversely, there may be unrelated hyperuricemia in patients with other conditions.
Gram staining and culture of synovial fluid are sufficient to exclude infection.	Cultures of blood, urine, or another primary site of infection (e.g. abscess) must be obtained and repeated as necessary if infection is strongly suspected clinically, Culture results may be negative in early infection.

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