Acute Arthritis in the Elderly: Differential Diagnosis and Treatment

Yi-Chun Lin[1], Wei-Sheng Chen[2], Hsiao-Yi Lin[2,3]*

[1]*Department of Internal Medicine, Taipei City Hospital,* [2]*Division of Allergy, Immunology and Rheumatology, Department of Internal Medicine, Taipei Veterans General Hospital, and* [3]*School of Medicine, National Yang-Ming University, Taipei, Taiwan.*

SUMMARY

Acute arthritis is a prevalent disease in outpatient clinics and emergency rooms. In the elderly, the symptoms/signs are different from those experienced by young patients. Therefore, the diagnosis and treatment of acute arthritis in the elderly are distinct. Here, we start by examining a case of acute arthritis and then review the literature to learn the principles of managing acute arthritis in the elderly. [International Journal of Gerontology 2008; 2(3): 83–90]

Key Words: crystal-induced arthritis, gouty arthritis, pseudogout, septic arthritis, urate-lowering therapy

Case Report

A 60-year-old male was sent to the emergency room for acute-onset right ankle pain with mild fever in the early morning.

The doctor, on duty at that time, took the patient's history. The patient, a business manager in a trading company, had many social engagements. He was a social drinker, with occasional excessive drinking. He had been taking diuretics for hypertension for 2 years. He had drunk a large amount of alcohol at a party on the previous night. He was awoken by right ankle pain at 02:00. Initially, he thought it was an ankle sprain from playing golf. However, the pain became increasingly severe, and was associated with redness, swelling, tenderness and local heat. He wanted painkillers and struggled to get out of bed. He fell to the ground and woke his wife. Subsequently, he was sent to our emergency room.

The physical examination noted an obese gentleman with an acute ill-looking appearance, body temperature of 38°C, pulse rate of 110/min, respiratory rate of 25/min, blood pressure of 160/86 mmHg, normal chest and abdomen, with no open wound over the integument. Acute synovitis was noted over the right ankle joint, with severe pain at mild motion. To clarify the etiology of the arthritis, the doctor aspirated 5 mL of synovial fluid from the right ankle joint. The fluid was yellowish and mildly turbid with some whitish crystals. Under the impression of acute crystal-induced arthritis, colchicine and diclofenac were prescribed. In addition, local ice packing was suggested.

The blood test results were as follows: white blood cell count (WBC), 12,500/mm^3; hemoglobin, 13.5 g/dL; platelets, 310,000/mm^3; erythrocyte sedimentation rate (ESR), 15 mm/hr; creatinine, 1.2 mg/dL; uric acid, 9.6 mg/dL; C-reactive protein (CRP), 2.1 mg/dL; fasting blood sugar, 125 mg/dL. The synovial fluid analysis revealed: WBC, 15,000/mm^3; polymorphonuclear neutrophils (PMN), 95%; glucose, 90 mg/dL; and many intracellular and extracellular needle-shaped crystals by light microscopy with strong negative birefringence under

Correspondence to: Dr Hsiao-Yi Lin, Division of Allergy, Immunology and Rheumatology, Department of internal Medicine, Taipei Veterans General Hospital, No. 201, Section 2, Shih-Pai Road, Taipei 11217, Taiwan.
E-mail: hylin@vghtpe.gov.tw
Accepted: March 4, 2007

polarizing microscopy. Monosodium urate (MSU) crystals were considered. A Gram stain was performed at the same time, but no suspicious pathogens were noted.

A definite diagnosis of acute gouty arthritis (GA) was made according to the positive MSU crystals in the synovial fluid. Three-day treatments of colchicine and diclofenac were prescribed to the patient. He was followed up in a rheumatologic clinic after this 3-day treatment.

Introduction

Acute arthritis is a common condition encountered in daily clinical practice, in both emergency rooms and rheumatologic clinics. Crystal-induced arthritis is the most common cause of acute arthritis in the elderly. However, other arthritis types or other conditions mimicking arthritis should be ruled out before making a definitive diagnosis. According to the affected joint count, acute arthritis can be classified into acute monoarthritis (such as crystal-induced arthritis, septic arthritis, and hemarthrosis) and acute polyarthritis (such as acute exacerbation of rheumatoid arthritis, atypical gout, and nodal osteoarthritis) (Table 1). Because the severity of each disease is variable, we should pay greater attention to how we handle elderly patients. If a patient presents with extreme pain, fever, suspicious septic arthritis, severe tophaceous gout, gastrointestinal tract bleeding, and unstable systemic condition (renal dysfunction, heart disease, liver disease, and poor blood sugar control), admission for further evaluation and management is mandatory. If a patient presents without these conditions, they can leave the emergency room after initial management and receive further treatment in an outpatient clinic.

Table 1. *Differential diagnosis of acute arthritis*

Acute monoarthritis	Acute polyarthritis
Crystal-induced arthritis	Atypical gout
Gout	Nonsuppurative septic arthritis
Pseudogout	Rheumatoid arthritis
Septic arthritis	Psoriatic arthritis
Hemarthrosis	Nodal osteoarthritis
Osteoarthritis	Palindromic rheumatism
Cellulitis	
Hallux valgus with bunion	

The steps for evaluating a patient with acute arthritis are as follows:

1. History taking. This is the first step of the diagnosis. The history taking should include the onset and duration of arthritis, characteristics of the pain, aggravating or relieving factors, previous episodes, diet, alcohol consumption, and exercise. In addition, it should include any history of trauma, traveling, organism or sexual exposure, past disease and drug histories, and family histories of arthritis, immunologic diseases or urolithiasis.
2. Physical examination. Alongside a general physical examination, local findings, such as acute inflammatory reactions, joint deformity, tophi or nodules, and open wounds, should be examined.
3. Laboratory tests. Blood tests, including a complete blood count, biochemical analyses (uric acid, renal and liver function, cholesterol and triglyceride, and blood sugar levels), inflammatory markers (CRP and ESR) and rheumatoid factor, are helpful. Urinary tests can detect hematuria, proteinuria, 24-hour uric acid excretion, and 24-hour creatinine clearance. To rule out cellulitis and septic arthritis from direct inoculation or hematogenous dissemination, a blood culture should be performed in febrile patients, and a pus culture for a suppurative wound.
4. Synovial fluid analysis. A definite diagnosis of acute arthritis cannot be made by history taking and physical examination alone. An arthrocentesis can be performed on a swollen joint, as long as there are no contraindications, such as overlying infection or severe dermatitis, to relieve the swelling, avoid joint damage, and diagnose the etiology of the arthritis. If septic synovial fluid is not likely, a local steroid injection can be given to rapidly relieve the inflammation. Synovial fluid can be divided into four groups: non-inflammatory, inflammatory, septic, and hemorrhagic (Table 2). The appearance, viscosity, protein, glucose, white and red cell counts, and PMN percentages under light microscopy differ among these four groups. Crystal-induced arthritis is highly suspected if intracellular needle- or rhomboid-shaped crystals are noted. A definite diagnosis can be made according to the refringence of the crystals under polarizing microscopy. Gram staining and bacterial cultures with a sensitivity test should be carried out if septic arthritis is suspected.