problems in family practice

Acute Joint Pain

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Acute joint pain is a common and often challenging problem to the family physician. The many etiologies of acute arthritis require a systematic approach to a careful definition of the problem which is essential to safe and effective therapy. The proper evaluation of joint pain of acute onset requires a detailed history and physical examination as well as a rationally selected battery of laboratory studies. This paper provides the busy physician with a specific approach to the diagnosis of acute joint pain as the basis for precise management.

Introduction

For the busy family physician, acute joint pain, like fever, is a frequently encountered and often challenging problem. Because joint pain is a symptom of underlying pathology or disease, the diagnosis of "arthritis" is no more precise than "fever" or "anemia." While it is often possible to find an immediate cause and thus correct the problem, the many etiologies of acute arthritis must include a systematic approach to precise definition of the problem. The purpose of this paper is to assist the physician in developing a method of dealing successfully and expeditiously with the constellation of problems presenting as acute joint pain.

Like "fever" and "anemia," arthritis may imply different pathological conditions to individual physicians. While precise definitions are difficult, the term "arthralgia" refers to a subjective symptom which denotes joint pain, discomfort or tenderness without objective findings upon examination. "Arthritis" describes the presence of objective joint inflammation such as soft tissue swelling, joint effusion, heat or redness. "Acute arthritis" is a confusing term and may denote the severity or course of arthritis. A more precise description might be "arthritis of recent onset."

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While many disease processes may present as, or be associated with, arthritis of recent onset, the approach to the problem is similar whatever the etiology. Usually, the most important information is historical. By knowing the setting of the problem, the pattern of joint involvement and the associated manifestations, the etiology can be narrowed to the point where the physical examination and laboratory data are necessary only to confirm diagnosis. In other instances, only the most thorough and thoughtful evaluation will reveal the cause. Some patients will defy early diagnosis because of the physician's inability to muster sufficient data to establish or exclude disease. Thus, the problem may remain unresolved and demand careful and periodic reevaluation.

In many patients with recent onset joint pain, the physician will immediately identify the nature of the problem. For example, the preschool child may refuse to use an arm; he protects it by holding the elbow flexed and forearm pronated. Painful limitation of forearm supination is found and a diagnosis of the "pulled" or dislocated elbow is established. A patient may present with a "sprain of the wrist." There is marked local tenderness in the region of the anatomic "snuff box" with pain on dorsiflexion and radial deviation. If X-rays show a fracture of the scaphoid (navicular) bone, the diagnosis is clear. If not, repeat X-rays in one to two weeks will usually reveal the fracture. Similarly, stress fractures in the metatarsals may present as local pain and tenderness, often with swelling. Early X-rays may or may not

reveal the fracture in the neck of metatarsal. Older or adolescent children may sustain lateral dislocations of the patella. The characteristic history includes sudden sharp pain; the knee gives way and the patient falls. Physical examination reveals a grossly swollen knee due to hemarthrosis. If the patella is found to be laterally displaced, the diagnosis is evident.

The preceding examples are cited to emphasize the importance of traumatic lesions in monarticular joint disease. However, we have chosen to exclude injuries in this discussion because the cause is usually obvious. Thus, non-traumatic diseases presenting with arthritis of recent onset are usually systematic in nature and the history and physical examination should be general and thorough. To restrict the evaluation to the patient's chief complaint is to risk misdiagnosis. Subsequent laboratory and X-ray evaluations should be dictated by a well-conceived "game plan" which clearly identifies the priorities for action and overrides the "shotgun" approach. Finally, therapeutic trials are rarely definitive and should not be used in an attempt to identify an etiology.

Subjective Data

Success or failure in making the correct diagnosis is often determined by the quality of the historical data. It is essential to elicit a clear pattern of symptoms. Is the joint pain confined to a single or to multiple joints? Which joints are involved? Is the arthritis migratory? Are there systemic features to the illness? Correct diagnosis is frequently facilitated by understanding associated diseases, epidemiologic patterns, lifestyles, and familial disease processes.

When a young person presents with migratory polyarthritis, a history of sore throat, fever and perhaps choreiform movements, the diagnosis of rheumatic fever seems probable.[1] It must be remembered, however, that while the large joints of the extremities are most frequently affected, and effusions, if present, are usually transient, multiple joints may be affected simultaneously. Also, the arthritis may be persistent and nonmigratory. In the unusual presentation, it may be especially important to obtain the appropriate history with regard to the occurrence of carditis, skin rash and nodules as well as the more common systemic features of acute rheumatic fever.

Subtle historical data may be helpful in identifying the child in the same age group who has juvenile rheumatoid arthritis.[2] It is important to remember that juvenile rheumatoid arthritis may present in varied ways and differs significantly in many respects from adult R.A. Among the most important differences are the high frequency of severe systemic disease, persistent pauciarticular manifestations and ocular involvement. Although it can occur at any age, the most frequent ages of onset are between two and five or between nine and 12 years. While usually polyarticular at the onset, 30 percent of cases are monoarticular with the knee being the most common joint involved. Frequently small children will deny pain even when the joint is obviously inflamed. On the other hand, arthralgias, transient joint swelling and constitutional symptoms may be the sequelae of rubella immunization or an otherwise nonconsequential viral infection.[3] Only a careful history may provide clues to the proper diagnosis.

If a patient presents with sudden onset of arthritis, a history of possible exposure to venereal disease (as in the case of a promiscuous go-go dancer, for example), and fever and skin rash, the historical probability of gonococcal arthritis may be established.[4] It is enhanced if urethral or vaginal discharge, tenosynovitis and multiple joint involvement is also present. The arthritis of Australian-antigen associated hepatitis[5] should not be overlooked in those possibly exposed, including drug abusers, especially when they also have fever and urticarial skin rash. The same historical features are, of course, equally compatible with systemic lupus erythematosus,[6] but it is helpful to know if the rash is photosensitive and accompanied by such features as Raynaud's phenomenon, pleuritic chest pain and even cardiac or neurological symptoms. While it is not practical to list all diseases associated with acute joint pain and arthritis, the following summary includes most pathological processes in which acute joint pain is a frequent occurrence:

1. *Infection:* Seen most often in the very young, the very old, and the debilitated. a) Bacterial — gonococcal, staphylococcal, streptococcal, others b) Viral — rubella, mumps, measles, infectious hepatitis, others c) Mycobacteria, fungi, Rickettsieae, others.

2. *Gout:* Abnormal purine metabolism resulting in hyperuricemia and urate crystal deposition, usually monarticular in older males. "Secondary" gout may result from many causes such as hematopoietic or neoplastic diseases, drug therapy, renal failure, etc.

3. *Pseudogout:* Deposition of calcium pyrophosphate dihydrate crystals in joints of older patients. Acute "gout" episodes are usually in larger joints, may become chronic. Chondrocalcinosis is usually present, but not invariably.

4. *Rheumatoid Arthritis:* Usually a polyarthritis (may be monarticular initially) of symmetrical peripheral joints, more frequently found in females.

5. *Juvenile Rheumatoid Arthritis:* May present as monarticular, oligoarticular or polyarticular disease which may be associated with severe systemic disease and is found in both boys and girls.

6. *Acute Rheumatic Fever:* An inflammatory disease occurring as a sequel to group A streptococcal infection, usually between ages five to 15.

7. *Systemic Lupus Erythematosus:* A chronic inflammatory disease of unknown etiology that may affect many organ systems and is usually seen in young females.

8. *Reiter's Syndrome:* Characterized by urethritis, arthritis, conjunctivitis, circinate balanitis and keratodermia blennorhagicum in young adult males.

9. *Ankylosing Spondylitis:* Chronic, progressive arthritis of the sacroiliac joints and axial skeleton usually found in males in their second or third decades. May also involve peripheral joints.

10. *Sarcoidosis:* Usually associated with erythema nodosum and is often migratory, polyarticular and involves large joints.

11. *Palindromic Rheumatism:* Recurrent, acute and self-limiting arthritis attacks.

12. *Intermittent Hydrathrosis:* Recurrent joint effusions, usually of the knee, which occur at regular intervals and are idiopathic.

13. *Inflammatory Bowel Disease:* Regional Enteritis (R.E.), Ulcerative Colitis (U.C.): Found in five percent of R.E. and 20 percent of U.C. cases and presents as either spondylitis or as an acute peripheral polyarthritis involving large joints.

14. *Erythema Nodosum:* An acute, self-limiting condition of multiple red, tender nodules in the skin of the lower extremities, most common in females and of multiple etiologies.

15. *Hyperparathyroidism:* Excessive parathormone production has been associated with arthritis of multiple types and is most common in adult females.

16. *Hypothyroidism:* Thyroid hormone deficiency is associated with arthralgias and myalgias and occasionally arthritis. Most frequent in middle-aged females and many have carpal tunnel syndrome.

17. *Leukemia:* Hematologic neoplasia with arthritis due to joint hemorrhage or infiltration and found most frequently in lower extremities with severe pain.

18. *Periarteritis Nodosa:* Arthralgias associated with multiple systems involvement secondary to diffuse, but focal, panarteritis and found most frequently in males. True arthritis is rare.

19. *Progressive Systemic Sclerosis (Scleroderma):* Peripheral arthritis most common in females with involved joints usually related to affected skin.

20. *Psoriasis:* Ten percent of patients with this skin disease develop a peripheral small joint arthritis.

21. *Pulmonary Disease (Hypertrophic Pulmonary Osteoarthropathy):* The syndrome of digital clubbing, synovitis and periostitis most often seen in middle-aged men with bronchogenic carcinoma.

22. *Shoulder-hand Syndrome:* Painful disability of the shoulder associated with pain, swelling and vasomotor changes in the hand most frequently seen in adults with myocardial infarction, cervical spondylosis, trauma or no apparent cause.

23. *Agammaglobulinemia:* Thirty percent of patients with this rare disorder develop a polyarticular, peripheral arthritis which is most common in children.

23. *Amyloidosis:* A polyarthritis resembling rheumatoid may occur secondary to amyloid infiltration of the synovium, usually in older patients.

25. *Carcinoma:* Arthritis similar to rheumatoid may be found in older patients with carcinoma of any type, but particularly of bronchus, prostate and breast.

26. *Henoch-Schönlein purpura:* Arthritis associated with purpura in children usually affecting knees and ankles and often following upper respiratory infection.

27. *Hyperlipidemia:* Periarticular symptoms and arthritis associated with xanthomas may be associated with the various hyperlipoproteinemias and follow primary incidence and prevalence patterns.

28. *Hemophilia:* Hemarthrosis occurs in 80-90 percent of patients with hemophilia and affects the knees, elbows and ankles most frequently.

29. *Hemochromatosis:* Most frequent in males over 40 with synovitis and boney enlargement most common in the small joints of the hands.

30. *Sickle Cell Anemia:* Crises may be accompanied by intensely painful polyarthralgias and arthritis.

31. *Ochronosis (Alkaptonuria):* An accumulation of homogentisic acid secondary to the deficiency of homogentisic acid oxidase, resulting in deposition of a pigmented polymer in cartilage which leads to a degenerative arthritis.

32. *Whipple's Disease:* Diarrhea, malabsorption and constitutional symptoms may be associated with migratory arthritis in middle-aged men.

33. *Behcet's Syndrome:* The triad of aphthous stomatitis, genital ulceration and iritis may be associated with polyarthritis, usually involving the knee, and central nervous system abnormalities and is more common in males.

34. *Multicentric Reticulohistiocytosis:* Destructive polyarthritis and nodular skin lesions most common in females with histologic examination revealing infiltration of tissues by giant cells with foamy cytoplasm.

35. *Familial Mediterranean Fever:* Recurrent attacks of fever and monarticular arthritis in young people of Mediterranean extraction.

36. *Neoplasms of Joints:* Pigmented villonodular synovitis, others. Rare, usually present in a single joint with swelling and/or pain and may require surgical exploration for diagnosis.

37. *Serum Sickness (Drug Reactions):* Acute onset of arthralgias, myalgias, urticaria, gastrointestinal and constitutional symptoms seven to 12 days after injection of foreign serum or drug, *usually* penicillin, but occurs with many drugs.

While the particular joint involved may be most helpful in the differential diagnosis, it should be remembered that no joints are immune from less common afflictions. Even though the first metatarsal phalangeal joint is the classical location for podagra or acute gouty arthritis, it is by no means diagnostic in any patient. Certainly if the patient is a menstruating female with a negative family history for gout, it is highly unlikely that she has gouty arthritis, whatever joint is involved.

Objective Data

A complete physical examination is essential since multiple diagnostic clues are often available if sought carefully. Also, the systemic features of an illness may be more specific than the articular manifestations alone. Skin rashes, as outlined above, are common in some entities, but rare in others such as gouty arthritis or rheumatoid arthritis where tophi or nodules may be found. Similarly, conjunctivitis, retinal changes, hepatosplenomegaly, heart murmurs, peripheral neuropathy, mononeuritis multiplex, petechial hemorrhages and lesions consistent with vasculitis, as well as others, may narrow the diagnostic spectrum when present. Careful evaluation of all of the joints is necessary because early or subtle changes may not be recognized by the patient or casual observer, particularly if there are other manifestations present. As the joints are examined, it is useful to remember that synovial membranes and periarticular

tissues are primarily involved in such processes as rheumatoid arthritis, infectious arthritis and gouty arthritis, while the bones and cartilage are most often affected by hereditary, neoplastic, and degenerative processes.

A detailed description of the technique for the examination of each joint is beyond the scope of this paper. Several points have general applicability and should be kept in mind in the examination of the patient with joint pain of recent onset. The range of motion of each joint should be assessed both actively and passively and compared with normal. If the examiner is aware of the range of motion of his own joints, a useful comparison is at hand. Inspection of each joint should include the identification of anatomical landmarks, skin lesions and color, swelling, deformities, periarticular muscle atrophy, tenosynovitis, and abnormal positioning or posture. Palpation should reveal the degree of tenderness, temperature, type of swelling and localized swellings such as ganglia, nodules or tophi, as well as crepitus or grating. Synovial proliferation presents as a doughy enlargement in the areas where the joint capsule and synovial reflections are near the surface. A joint effusion may be detected by a produceable fluid wave or a ballotable patella in an accessible joint such as the knee, but may be impossible to demonstrate in the hip or shoulder short of arthrocentesis. These types of swelling should be distinguished from the firm, generally nontender, spurs or lipping of boney origin common in degenerative disease. Testing for instability of an affected joint is particularly important in trauma and progressive disease. Initially, it is most important to look carefully for signs that suggest infection since this is the problem which usually requires the most rapid attention.

Laboratory studies are helpful and necessary, but should not be ordered indiscriminately. Those that are most helpful are shown below:

A. CBC
   1) Anemia
      a) Anemia of chronic disease in rheumatoid arthritis, infection
      b) Hemolysis — systemic lupus erythematosus
   2) Erythrocytosis — gout
   3) Elevated white cell count — infection, leukemia
   4) Depressed white cell count — systemic lupus erythematosus
   5) Thrombocytopenia — systemic lupus erythematosus

B. Westergren sedimentation rate
   1) Elevated — any inflammatory process
   2) Normal — degenerative arthritis, trauma

C. Serological tests
   1) Serological tests for syphilis — may be false positive in systemic lupus erythematosus, rheumatoid arthritis
   2) Antinuclear antibodies — systemic lupus erythematosus, other connective tissue diseases
      a) LE cell test
      b) Fluorescent antibody tests — patterns may be helpful
         (1) Speckled — progressive systemic sclerosis
         (2) Peripheral (shaggy) — systemic lupus erythematosus
         (3) Nucleolar — progressive systemic sclerosis
         (4) Homogeneous — systemic lupus erythematosus
      c) Anti-DNA — systemic lupus erythematosus
   3) Rheumatoid factor — rheumatoid arthritis — frequently negative early
   4) Streptococcal antibody tests (anti-streptolysin-O, anti-hyaluronidase, anti-streptokinase, others) — rheumatic fever
   5) Gonococcal antibodies — gonococcal arthritis

D. Cultures in addition to synovial fluid — infectious arthritis
   1) Blood
   2) Skin lesions
   3) Urethra, rectum, pharynx, cervix, vagina

E. Urinalysis — systemic lupus erythematosus, Henoch-Schönlein purpura, alkaptonuria

F. Uric acid — elevated in gouty arthritis — also may be elevated on a familial basis and secondary to drugs, renal disease, others

G. Chest X-ray — sarcoidosis, systemic lupus erythematosus

H. Electrocardiogram — acute rheumatic fever, systemic lupus erythematosus, pericarditis, ankylosing spondylitis

I. Serum complement
   1) Elevated — rheumatoid arthritis
   2) Depressed — systemic lupus erythematosus

J. Liver function tests, Australian-antigen — hepatitis, sarcoidosis

K. Joint X-rays — trauma, soft-tissue swelling

L. Serum iron and total iron binding capacity, bone marrow, Coombs — differentiate anemia of chronic disease from others

M. Sickle cell prep, Hemoglobin electrophoresis — sickle cell anemia, others

Initially a complete blood count and a Westergren sedimentation rate should be obtained on each patient presenting with arthritis of recent onset. In addition, those studies which will help answer questions raised in the history and physical examination should be done. Rarely, if ever, are all of the tests mentioned above indicated in the same patient. The "shotgun" approach is not only expensive for the patient, but suggests faulty reasoning by the physician. Rarely is a uric acid determination helpful in children or young women and LE preps usually contribute nothing in the older man presenting with classical gouty arthritis on clinical grounds. A few carefully chosen studies considered in the light of a complete history and physical examination are more helpful than a whole battery of tests used alone. A properly obtained and correctly examined synovial fluid specimen can be diagnostic for hemarthrosis, septic arthritis, gout and pseudogout and is also helpful in other processes. Joint aspiration is safe and simple if properly done. It must be remembered, however, that a normal or negative synovial fluid does not exclude any etiology from consideration. Also, many laboratories are not able to deal optimally with synovial fluid specimens, and as a result, improper inferences may be drawn from faulty analysis of synovial fluid. The introduction of infection into the joint

TABLE I: Synovial Fluid Findings

	Crystals (polarized light exam)	WBC/mm³	PMN %	Culture
Normal	None	Less than 200	Less than 25%	Negative
Trauma	None	Approximates blood	Less than 5%	Negative
Infectious Arthritis	None	Usually greater than 100,000, but may be much lower	Usually greater than 75%, but may be less	Usually positive
Gouty Arthritis	Positive monosodium urate	200-100,000	Usually greater than 50%	Negative
Pseudogout	Positive calcium pyrophosphate	200-100,000	Usually greater than 50%	Negative
Rheumatoid Arthritis	None	Variable, usually 10,000-100,000	Variable, usually 40-80%	Negative
Acute Rheumatic Fever	None	Usually 10,000-30,000	10-50%	Negative
Systemic Lupus Erythematosus	None	Variable, usually 10,000-100,000	Variable, usually 25-75%	Negative

space should be scrupulously avoided. This is accomplished by using sterile technique, including gloves and a mask when necessary. A common error in joint aspiration is the failure to use a needle with a large enough bore to allow viscous pus, crystals or cellular debris to pass into the syringe. An 18-gauge or larger needle is usually required when a diagnostic arthrocentesis is performed. This needle size is not unduly traumatic and is not particularly painful if the injection site is initially penetrated with local anesthetic.

Useful and important laboratory examinations on synovial fluid are aerobic, anaerobic, mycobacterial and fungal cultures, gram stain, cell count with differential and examination for crystals. In order to diagnose gouty arthritis or pseudogout, it is necessary to examine the synovial fluid for crystals by polarized light microscopy. While a standard microscope may identify crystals on occasion, it is impossible to characterize their birefringence. Most important, the crystals are frequently missed when early standard light microscopy is used. It should be noted that on occasion cholesterol crystals may be present and if there have been previous joint injections, steroid crystals may also be seen. This diagnosis is most secure when the crystals are detected intracellularly in the leukocytes.

Rheumatoid factor and synovial fluid complement are occasionally helpful, but rarely do serology, glucose or enzyme levels add significantly to the diagnostic process. Evaluation of the mucin clot has historical interest, but because it is friable in all forms of inflammation, it usually is not helpful in diagnosing arthritis of recent onset once trauma has been excluded. X-rays are usually not helpful in diagnosing recent onset joint pain when trauma has been excluded. Synovial biopsy also contributes little, if any, early specific information. Typical synovial fluid parameters are found in Table I.

Assessment and Plan

After an adequate data base related to the acute joint pain has been obtained, it must be integrated into an appropriate assessment of the problem. To make a definite diagnosis, specific diagnostic criteria must be met. Individual positive pieces of data are necessary to make the diagnosis, but by themselves are not sufficient. For example, many of Jones criteria[9] may be present in a given patient and yet the diagnosis is clearly not acute rheumatic fever. Likewise, gouty arthritis[10] should not be equated with hyperuricemia, nor do fever and leukocytosis exist only in pyogenic arthritis.[7] Not only should the physician avoid being fooled in the assessment process, he must be able to act expeditiously and

economically. In order to do so, the establishment of priorities is essential. The misdiagnosis or neglect of infectious arthritis or acute rhematic fever may be crippling or even life-threatening. Gonococcal arthritis or gouty arthritis are completely correctable if diagnosed early and properly treated. In the majority of the remaining disease processes presenting with acute arthritis, appropriate diagnosis and management can alter positively the course of the illness, but definitive diagnosis and treatment are not as urgent. While firm diagnostic criteria are not available for all diseases presenting with arthritis of recent onset, definite attempts are being made in this area.[8]

For the physician to deal realistically with the problem of joint pain of recent onset, he must understand the natural history and course of the specific disease with which he is dealing. This is necessary in order to formulate appropriate objectives for the specific patient and to establish a plan of action.

Once the most emergent conditions are excluded from the differential, the wisest approach is to observe the patient without treatment until the diagnosis is evident or the patient improves. Therapeutic trials in general should be avoided. They usually do not contribute insight into a particular problem and may mask a condition requiring specific intervention.

It is not possible to give specific details on all the possible disease processes responsible for joint pain of recent onset. However, the causes of acute onset arthritis in a few of the most common, representative diseases found in a busy primary care practice are summarized in Tables II-V. Infectious arthritis (Table II), including the articular manifestations of gonococcemia, is included because this is a true medical emergency when present and thus requires early and appropriate therapy. Gout (Table III) is included not only because it is common, but also because it is frequently over-

TABLE II: Infectious Arthritis*

Organism	Incidence Adults	Incidence Children	Drug of Choice	Dosage	Duration of Therapy	Alternates	Comments
Gram Positive Cocci identified by Gram stain prior to culture results	45%	75%	Nafcillin	100 mg/kg/ day in 4-6 doses I.V.	2 weeks or until joint is normal, then 4-6 wks. oral therapy	Cephalosporins Penicillins Erythromycin	Penicillin-G resistant. Staphylococcal must be considered present until disproved
Staphylococcus Aureus Penicillin-G resistant (culture proven)	25%	40%	Nafcillin	100 mg/kg/ day in 4-6 doses I.V.	2 weeks or until joint is normal, then 4-6 wks. oral therapy	Cephalosporins Penicillins Erythromycin	
Staphylococcus Aureus Penicillin-G sensitive (culture proven)			Penicillin G	2-3x10^5 u/kg day in 4-6 doses I.V.	2 weeks or until joint is normal, then 4-6 wks. oral therapy	Cephalosporins Penicillins Erythromycin	
Diplococcus Pneumonia	10%	10%	Penicillin G	2-3x10^5 u/kg day in 4-6 doses I.V.	10-14 days	Cephalosporins Penicillins Erythromycin	Lower doses may be appropriate
Streptococcus	10%	25%	Penicillin G	2-3x10^5 u/kg day in 4-6 doses I.V.		Cephalosporins Penicillins Erythromycin	
Gram Negative Cocci identified by Gram stain prior to culture results	50%	10%	Penicillin G (Ampicillin in children)	200 mg/kg/ day in 4-6 doses I.V. or I.M.	10-14 days	Tetracycline Chloramphenicol	Avoid Tetracycline labeling of teeth

Repeated, frequent joint aspiration is necessary in all infected joints.

diagnosed due to the failure of the physician to use rigid diagnostic criteria.[7] In addition, proper therapy is usually very effective and is most satisfying to both patient and physician. Rheumatoid arthritis (Table IV) is included as a reminder that chronic, systemic disease involving many joints often begins in a solitary joint and may appear suddenly. The diagnosis of juvenile rheumatoid arthritis (Table V) is occasionally overlooked when it appears as other than typical Still's disease.

A systematic approach to the patient presenting with the

TABLE III: Acute Gouty Arthritis

History	Physical Examination	Laboratory Data	Treatment Modality
1) Usually occurs in males over 30 years.	1) Joint is usually swollen, hot, dusky red and tender.	1) The diagnosis is firmly made by the demonstration of intracellular uric acid crystals in the synovial fluid of the affected joint. These crystals are negatively birefringent by polarized microscopy.	1) Oral Colchicine 0.6 mg qh until pain is relieved or toxic symptoms occur such as nausea, vomiting or diarrhea. Rarely are more than 10-12 doses necessary. The acute arthritis of sarcoidosis has been reported to be responsive to this regimen.
2) Attack is sudden in onset.	2) The big toe joint is the first affected in 50% of patients (podagra).	2) The serum uric acid level is almost always greater than 7 mg. % by the uricase method.	2) Intravenous Colchicine 2-4 mg I.V. may be repeated once in 4 hours if the response is questionable or incomplete. Gastrointestinal toxicity is minimized with this regimen.
3) First attack is usually monarticular and affects the big toe, instep, ankle and knee most commonly.	3) Upper extremity joints are involved less frequently than those of the lower extremities.	3) Sedimentation rate may be elevated.	3) Indomethacin 150-300 mg by mouth in divided doses on the first day with a daily dose of 100-150 mg to follow for the next several days. This is considered to be as effective as Colchicine by many. Occasional toxicity is usually manifest as gastrointestinal upset, headache or dizziness.
4) The pain is excruciating and may be described as burning, crushing or throbbing.		4) X-rays are usually negative with early disease.	4) Phenylbutazone or oxyphenbutazone 400-800 mg by mouth in divided doses on the first day with a dose of 100 mg 4 times a day for the next several days. Probably as effective as Indomethacin and Colchicine, but undesirable for chronic use because of toxicity.
5) Periods between attacks are usually symptom-free.		5) There may be decreased enzyme levels such as hypoxanthine-guanine phosphoribosyl transferase in certain subgroups of patients with gouty arthritis.	5) Steroids are undesirable because they are not as effective as the above agent and incur greater risk.
			6) Allopurinol and uricosuric agents have no place in the treatment of acute gouty arthritis and may cause exacerbation of the acute phase.

TABLE IV: Rheumatoid Arthritis With Acute Onset

History	Physical Examination	Laboratory Data	Treatment
1) Usually occurs in females in middle years, but can occur in any age group or sex.	1) Usually swelling, tenderness and decreased motion of affected joint(s).	1) Westergren erythrocyte sedimentation rate is usually elevated.	1) Rest and avoidance of trauma of affected joint(s).
2) Attack is usually insidious but may be of rapid onset.	2) Peripheral joints are usually affected. The proximal interphalangeal, metacarpal phalangeal, and metatarsal phalangeal joints are most often affected. The more proximal limb joints are frequently involved but the distal interphalangeal joints are rarely inflamed.	2) Rheumatoid factor may be absent early.	2) Range of motion exercises should begin early but should be very gentle in the severely inflamed joint.
3) Usually attacks symmetrically with multiple joint involvement.	3) Joint swelling consists of soft tissue and/or fluid, not boney enlargement.	3) Synovial fluid analysis usually shows less than 50,000 WBCs with 75% polys or less. The mucin clot may be poor and frequently the rheumatoid factor titer is significantly higher than that found in the serum, while the complement level is lower.	3) Early attention to proper position and posture is important. Night splints, etc. may be required to prevent flexion contractures.
4) Generalized stiffness, most severe in the morning, is frequently a major complaint.	4) Nodules, bone and joint destruction and extraarticular manifestations are not usually seen in new cases of rapid onset.	4) X-rays rarely reveal anything but soft tissue swelling early.	4) Virtually all patients should be tried on full salicylates (3.6-4.8 gms/day) before adding additional agents.
5) Systemic complaints of fatigue, weakness and malaise are frequent. Fever higher than 103°F may occur but is rare and requires the exclusion of other etiologies.			5) Indomethacin, gold and other agents should not be added until the diagnosis is secure and a fair trial for a conservative program has been accomplished.

TABLE V: Juvenile Rheumatoid Arthritis

History	Physical Examination	Laboratory Data	Treatment
1) Onset of very acute in approximately 20%. Systemic features may include high fever, skin rash, iridocylitis, splenomegaly, pericarditis and arthritis may be absent.	1) Knees, wrists, ankles and neck are common initially involved sites.	1) No specific diagnostic tests available.	1) Adequate rest, including daytime rest periods.
2) 50% present with polyarticular disease.	2) Radial deviation is more common than ulnar deviation in children.	2) Leukocytosis is frequent.	2) Avoidance of trauma to involved joints.
3) 30% may present with monarticular disease with no systemic features.	3) Nodules are rarely found.	3) Often mild normocytic, normochromic anemia.	3) Slit lamp examinations are necessary acutely and every 3 to 6 months.
4) Children may deny joint pain, but present with guarding, swelling, limited motion or a limp.	4) Fever is frequent.	4) Sedimentation rate is usually elevated but need not be so.	4) Active and passive exercise daily.
5) Transient temporomandibular joint complaints are common.	5) Evanescent, trunkal, salmon-colored macular rash is found in 30%.	5) ASO titer may be elevated due to unrelated prior infection.	5) Splints may help protect badly inflamed joints or avoid flexion deformities.
6) Often difficult to distinguish from infection, malignancy or rheumatic fever early.	6) Lymphadeyopathy is frequent.	6) Rheumatoid latex fixation is usually negative (10-20% positive).	6) Drugs should be restricted to salicylates, reserving steroids for the most severe cases. Gold and other anti-inflamatory agents are not appropriate because of increased and potentially fatal toxicity.
	7) Cardio-respiratory findings are rare.	7) Synovial fluid is nonspecific, "inflammatory" in nature.	a) Aspirin 50-130 mg/kg/day. Toxicity is difficult to detect. Tinnitus is rare in children.
	8) Iridocyclitis occurs in 10-15%, usually those with monarticular onset. Requires slit lamp to detect.		b) Steroids should be held to lowest doses possible and used only by physicians acquainted with potential problems.

problem of acute joint pain usually leads to correct diagnosis which allows appropriate therapy. The proper evaluation of this problem requires a detailed history and physical examination, as well as a rationally selected battery of laboratory studies. A less thorough approach to the problem frequently proves unsatisfactory to patient and physician alike.

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