

Rheumatoid factor is found in approximately 80% of patients with rheumatoid arthritis but also found in other rheumatic diseases, chronic infection, neoplasia, and almost any disease state that can cause chronic hyperglobulinemia. Neither positive nor negative test results are diagnostic, and the results should be interpreted only in the clinical context. Although the specificity of the rheumatoid factor is low, it does predict more aggressive joint disease and extra-articular joint manifestations.

Antibodies to cyclic citrullinated peptides are helpful in diagnosing rheumatoid arthritis because they have a high specificity (>90%). Their sensitivity varies from about 50% to 75%. Antibody tests should be ordered and repeated only if they can help in making the diagnosis, assessing the prognosis, or altering the treatment plan.

Tests for acute phase proteins, C-reactive protein, and the erythrocyte sedimentation rate are nonspecific, but positive results suggest an inflammatory disease. In some cases, such as in patients with giant cell arteritis and polymyalgia rheumatica, these tests may be useful for the diagnosis and monitoring the course of disease and therapy. Anemia may suggest chronic disease or hemolytic anemia. Leukopenia, especially lymphopenia, suggests SLE, and thrombocytosis indicates active inflammation. Leukocytosis may reflect inflammation or infection, and glucocorticoid therapy also elevates the neutrophil cell count by demarginalization. Urinalysis should always be performed for patients with systemic disease. Proteinuria, red blood cells, and casts should be considered evidence of occult renal disease. Laboratory tests should always be considered in the context of the clinical presentation.

### RADIOGRAPHIC STUDIES

Radiographic studies often show changes characteristic of particular diseases. In patients with established rheumatoid arthritis, radiographs may demonstrate classically erosive disease of the small joints of the wrists, the ulnar styloid, the metacarpophalangeal and proximal interphalangeal joints, and the small joints in the foot. The erosions are bland and nonreactive. In contrast, erosive psoriatic arthritis causes a sclerotic reaction, and the patient may have characteristic telescoping of joints, also called *pencil-in-cup lesions*. Large erosions with overhanging sclerotic margins and even juxta-articular tophi may be seen in gout.

In ankylosing spondylitis, sacroiliitis is observed on pelvic x-ray films and has high diagnostic specificity. Syndesmophytes (i.e., calcification of the outer rim of the annulus fibrosus), bridging osteophytes, calcification of spinal ligaments, and a typical bamboo spine in the late stages are seen on lumbar and chest radiographs. Joint space narrowing, bony spurs, and sclerosis are seen in osteoarthritis. Chondrocalcinosis is a common finding. It may be asymptomatic or may lead to crystal arthritis (i.e., pseudogout). In acute arthritis, radiographs are much less helpful because bony changes take time to develop; only in septic joint disease is destruction observed in the early stages.


Imaging modalities such as magnetic resonance imaging (MRI), radionuclide scans, ultrasound, and computed tomography are often useful in assessing diseases of bones, joints, muscle, and soft tissues. Ultrasound may be used to detect synovial cysts, especially Baker's cysts of the knee, and it is being used more frequently in the outpatient setting to guide procedures.

MRI is the procedure of choice for evaluating early avascular necrosis of bone, especially the hips, and for meniscal or rotator cuff disease. MRI is preferred for evaluating intervertebral disk disease with radiculopathy and spinal stenosis, and it is useful for assessing solid lesions of bone and joints, including neoplastic lesions. The sensitivity of MRI for detecting edema (i.e., water) enables evaluation of infectious and noninfectious inflammatory muscle diseases. MRI is a sensitive but not a specific modality for evaluating osteomyelitis, properties shared with radionuclide imaging. MRI should not supplant clinical evaluation or plain radiography.

In many instances, diagnosis can be made with certainty only by pathologic examination of tissue. Muscle biopsy may be necessary to establish a diagnosis of inflammatory muscle disease, and nerve biopsy may be needed to detect vasculitis. Skin biopsy is useful in differentiating the many causes of rheumatologic skin disease. Renal biopsy is often needed for determination of the diagnosis, treatment, and prognosis.

### SUMMARY

The evaluation of arthritis begins with a detailed history consisting of the location and pattern of joint involvement, differentiation of inflammatory from mechanical and other causes, and a thorough review of systems to determine the nonarticular systemic features. The patient's age and sex, family history, medication history, and coexisting medical conditions have a bearing on the diagnosis and treatment plan. Radiographic and laboratory studies, particularly synovial fluid analysis, provide confirmatory and sometimes diagnostic information.

 For a deeper discussion of these topics, please see Chapter 256, "Approach to the Patient with Rheumatic Disease," in Goldman-Cecil Medicine, 25th Edition.

### SUGGESTED READINGS

- Felson DT: Epidemiology of the rheumatic diseases. In Koopman WJ, editor: Arthritis and allied conditions, ed 13, Baltimore, 1997, Williams & Wilkins, p 3.
- Gordon DA: Approach to the patient with musculoskeletal disease. In Goldman L, Bennett JC, editors: Cecil textbook of medicine, ed 21, Philadelphia, 2000, WB Saunders, pp 1472–1475.
- Sergent JS: Approach to the patient with pain in more than one joint. In Kelley WN, Harris ED Jr, Ruddy S, et al, editors: Textbook of rheumatology, ed 5, Philadelphia, 1997, WB Saunders, p 381.