RHEUMATOID FACTOR

Diagnosing Rheumatoid Arthritis and Related Disorders

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This article describes the rheumatoid factor (RF) test, and it explains how RF contributes to symptoms in rheumatoid arthritis and several other autoimmune disorders.

Rheumatoid Factor Antibodies

Rheumatoid factor (RF) is a term used to describe a group of autoantibodies known as rheumatoid factors. The RF test is considered the basic screen and hallmark for the autoimmune disorder rheumatoid arthritis (RA). RF is considered an early marker since its presence is associated with an increased risk of developing RA in people with mild arthritic symptoms.

Subclasses

RF factors include three subclasses that react with the crystallizable fragment (Fc fragment) of immunoglobulin G (IgG). Immunoglobulins are proteins normally found in the body that are used to produce antibodies. IgG is a subclass of immunoglobulin with a structure allowing it persist for a long time. IgG antibodies produced in response to infection or vaccines generally persist for life. RF targets these proteins by combining with them to form deposits that lodge into joints and tissues.

The three subclasses of RF include IgM, IgA and IgG autoantibodies. Most tests for RF measure each of these subtypes. Each subtype is associated with a different symptom or disease process, and the simultaneous presence of all three types is usually only seen in rheumatoid arthritis. RF, type IgA antibodies, are associated with symptoms other than those affecting joints, such as mucosal and secretory problems and bone erosions. In patients with rheumatoid arthritis, IgM RF predominates and the other subtypes are usually present in lower amounts.

Disorders Associated with RF

Rheumatoid factors are found in 50-90 percent of patients with classic RA, with higher concentrations seen in active disease. Higher titers are also seen in more severe forms of the disease. RF are also seen in 75-95 percent of patients with Sjogren's syndrome, 50-60 percent of patients with mixed connective tissue disease (MCTD), 25-40 percent of patients with the kidney disease IgA nephropathy, 15-35 percent of patients with SLE, 20-30 percent of patients with systemic sclerosis and 5-10 percent of patients with polymyositis and dermatomyositis.
RF is not only present in patients with rheumatoid arthritis. It may also occur in patients with other autoimmune conditions such as systemic lupus erythematosus (SLE), Sjogren's syndrome, and occasionally scleroderma and polymyositis. It is also seen in the rheumatoid arthritis overlap syndromes, such as RA/SLE overlap and Scleroderma/RA overlap. Like the ANA test, the RF test may also be positive in other conditions and in the absence of disease, especially with advancing age. Other conditions that may cause a positive RF test result include chronic active hepatitis, sarcoidosis, chronic infection, various cancers and syphilis.

**RF Complexes in Arthritis**

The disease process in rheumatoid arthritis involves the presence of deposits of RF complexed or linked with IgG occurring in various tissues, such as the synovium or joints. These complexes interfere with the normal function of the joint and promote inflammation. The inflammation and the effects of immune system chemicals result in tissue damage and sometimes damage to blood vessels in the affected area. The RF test is used to diagnose arthritic conditions and to monitor response to treatment and prognosis. During periods of remission or a favorable response to treatment, RF titers fall and the RF test results may be negative.

**Resource:**

Marc Golightly and Candace Golightly, Laboratory Diagnosis of Autoimmune Disease, Medical Laboratory Observer, July, 2002.

James Peter and Herminio Reyes, Use and Interpretation of Tests in Rheumatology, Santa Monica, CA: Specialty Laboratories 1996.

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