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Medical Encyclopedia: C-reactive protein

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Alternative names

CRP

Definition

C-reactive protein is a test that measures the concentration of a protein in serum that indicates acute inflammation.

How the test is performed

Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand. The puncture site is cleaned with antiseptic, and an elastic band or blood pressure cuff is placed around the upper arm to apply pressure and restrict blood flow through the vein. This causes veins below the band to swell with blood.

A needle is inserted into the vein, and the blood is collected in an air-tight vial or a syringe. During the procedure, the band is removed to restore circulation. Once the blood has been collected, the needle is removed, and the puncture site is covered to stop any bleeding.

CRP is detected with the use of antiserum (serum that contains antibodies for a particular antigen) in several tests that measure the protein and protein-bound molecules.

How to prepare for the test

No preparation is necessary for this test.

How the test will feel

When the needle is inserted to draw blood, some people feel moderate pain, while others feel only a prick or stinging sensation. Afterward, there may be some throbbing.

Why the test is performed

C-reactive protein is a special type of protein produced by the liver that is only present during episodes of acute inflammation. The most important role of CRP is its interaction with the complement system, which is one of the body's immunologic defense mechanisms.

While this is not a specific test, it does give a general indication of acute inflammation. Your health care provider might use this test to check for flare-ups of inflammatory diseases like rheumatoid arthritis, lupus, or vasculitis. The test might also be useful to monitor response to therapy.

However, even in instances of inflammation in rheumatic diseases such as rheumatoid arthritis and systemic

lupus erythematosus, the CRP levels may not always be elevated. The reason for this is not known at this time. Thus, a low CRP level does not always mean that there is no inflammation present.

Recently, new studies have suggested that CRP may also be elevated in heart attacks. The role of CRP in coronary artery disease remains unclear. It is not known whether it is merely a marker of disease or whether it actually plays a role in causing atherosclerotic disease. Many consider elevated CRP to be a positive risk factor for coronary artery disease.

Normal Values

Normal CRP values vary from lab to lab, but generally there is no CRP detectable in the blood (less than 0.6 mg/dL).

What abnormal results mean

Since the CRP is a general test, a positive CRP may indicate a number of things, including:

- Rheumatoid arthritis
- Rheumatic fever
- Cancer
- Tuberculosis
- Pneumococcal pneumonia
- Myocardial infarction
- SLE
- Connective tissue disease
- Bacterial, viral, fungal, or parasitic infection
- Other causes of ongoing inflammation

Positive CRP results also occur during the last half of pregnancy or with the use of oral contraceptives.

What the risks are

The risks associated with puncturing a vein are slight:

- Excessive bleeding
- Fainting or feeling light-headed
- Hematoma (blood accumulating under the skin)
- Infection (a slight risk any time the skin is broken)
- Multiple punctures to locate veins

Special considerations

Veins and arteries vary in size from one patient to another and from one side of the body to the other. Obtaining a blood sample from some people may be more difficult than from others.

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