



Inflammation Tests

Blood Inflammatory Markers

+ Faecal Calprotectin

Inflammation and blood proteins

If you have inflammation in a part of your body then extra protein is often released from the site of inflammation and circulates in the bloodstream. The erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) blood tests are commonly used to detect this increase in protein and the effects that they have, and so are useful 'markers' of inflammation to monitor and assess the effectiveness of treatment and the state of the underlying inflammatory bowel disease.

Blood Tests

Erythrocyte sedimentation rate (ESR)

A blood sample is taken and put in a tube that contains a chemical to stop the blood from clotting. The tube is left to stand upright. The red blood cells (erythrocytes) gradually fall to the bottom of the tube (as sediment). The clear liquid plasma is left at the top. The ESR measures the rate at which the red blood cells separate from the plasma and fall to the bottom of a test tube. The rate is measured in millimeters per hour (mm/hr). This is easy to measure as there will be a number of millimeters of clear liquid at the top of the red blood after one hour.

If certain proteins cover red cells, these will stick to each other and cause the red cells to fall more quickly. So, a high ESR indicates that you have some inflammation, somewhere in the body. An ESR is a good indicator of inflammation over the course of the previous 2 weeks.

C-reactive protein (CRP)

This is sometimes called an 'acute phase protein'. This means that the level of CRP increases when you have certain diseases which cause inflammation. CRP can be measured in a blood sample. A CRP is a good indicator of inflammation over the course of the last few days.

What conditions affect the erythrocyte sedimentation rate and C-reactive protein level?

The ESR and CRP levels can be raised with any inflammatory condition eg.

- Infections (mainly bacterial infections)
- Abscesses
- Certain types of arthritis
- Various other muscular and connective tissue disorders
- Tissue injury and burns
- Cancers
- Crohn's disease
- Rejection of an organ transplant
- Heart attack

Some conditions lower the ESR. For example, heart failure, polycythaemia, sickle-cell anaemia, and cryoglobulinaemia.

When are these tests used?

To help diagnose diseases

ESR and CRP are 'non-specific' tests. Basically, a raised level means that 'something is going on', but further tests will be needed to clarify the cause of the illness.

To monitor the activity of certain diseases

For example, if you have IBD, the amount of inflammation and disease activity can partially be assessed by measuring one of these blood tests. As a rule, the higher the level, the more 'active' the disease. The response to treatment may also be monitored, as the level of CRP or ESR may fall if the condition is responding well to treatment.

Both tests are useful. However, changes in the CRP are more rapid. So, for example, a fall in the CRP within days of starting treatment for certain conditions is a useful way of knowing that treatment is working. This may be important to know when treating a serious infection or a severe flare-up of an inflammatory condition. For example, if the CRP level does not fall, it may indicate that the treatment is not working and may prompt a doctor to switch to a different treatment.

Stool Tests

Faecal Calprotectin

This is a new stool test based on a breakdown product of one of the inflammatory cells seen in the bowel during acute inflammatory bowel disease. It accurately predicts the degree of inflammation in the bowel without having to go into the bowel (with and endoscopy). It has a high sensitivity and specificity (98% and 97%, respectively). It can be elevated anywhere up to 2 months before symptoms of a flare develop, and so can be used to predict when flares are about to happen. Like the ESR and CRP, it can also be used to gauge effectiveness of treatment regimes. It is also very useful at differentiating between functional (IBS symptoms) and organic (inflammatory) symptoms, so helps target management more appropriately, and can help prevent unnecessary colonoscopy and courses of steroids.