TEST

Immunofixation blood test

An immunofixation blood test identifies abnormal antibody proteins and shows their type.

WHAT IT MEASURES
Type of abnormal antibody protein in blood

SAMPLE
Blood

FASTING NEEDED?
No, unless fasting for other tests

HOW LONG IT TAKES
About five minutes for blood collection

RESULTS IN
Usually one to several days, depending on laboratory

USED FOR
Diagnosis and monitoring of monoclonal antibody proteins

MAIN LIMITATION
Small or unusual proteins may require additional tests

Overview

An immunofixation blood test looks for unusual antibody proteins in the liquid part of your blood. It is also called serum immunofixation electrophoresis in laboratory reports.

Antibodies, or immunoglobulins, are proteins made by immune cells. They normally occur as a mixture of many different antibodies. A large amount of one identical antibody, or part of an antibody, is called a monoclonal protein . It may also be called an M protein or paraprotein.

During immunofixation, the laboratory separates proteins and uses specific reagents to identify them. The result can show the antibody's heavy-chain type, such as IgG, IgA, or IgM, and its light-chain type, called kappa or lambda.

Immunofixation is often performed after serum protein electrophoresis, or SPEP, finds a suspicious protein pattern. Immunofixation is better at identifying the protein's type, but it does not reliably measure how much is present.

Why the test is ordered

Your clinician may order immunofixation when another blood or urine test suggests that one group of immune cells is producing a single antibody protein.

It may be part of an assessment for conditions involving plasma cells or other antibody-producing cells. These include monoclonal gammopathy of undetermined significance, known as MGUS, multiple myeloma, Waldenström macroglobulinemia, and light-chain amyloidosis. An abnormal result does not by itself show which condition, if any, is present.

The test may also be ordered when blood tests or symptoms need further explanation, such as:

For someone with a known monoclonal protein, immunofixation may help confirm whether it remains detectable. Other tests are usually better for measuring changes over time.

- Unexplained anemia, kidney problems, high calcium, or increased total protein
- Persistent bone pain or fractures without a clear cause
- Numbness or tingling that may involve a nerve problem
- Repeated infections or unexplained weight loss
- An abnormal SPEP, urine protein test, or serum free light-chain result

Who should have the test

This is not usually a general screening test for people without symptoms or abnormal laboratory findings. It is most useful when there is a specific reason to look for a monoclonal protein.

You may have the test if another result is abnormal, if your symptoms and medical history raise concern about an antibody-producing cell disorder, or if you are already being monitored for one.

A normal immunofixation result cannot exclude every plasma-cell disorder. Your clinician may combine it with SPEP, serum free light chains, urine immunofixation, blood counts, kidney tests, calcium testing, or imaging.

How to prepare

You usually do not need to fast. You can generally eat, drink water, and take your regular medicines unless you have been given different instructions because other blood tests are being collected at the same time.

Tell the person ordering the test about all medicines and recent treatments. This is particularly important for monoclonal antibody medicines used to treat cancer or immune conditions, because some can appear as bands on immunofixation.

Also mention recent intravenous immunoglobulin, called IVIG, or a recent blood product transfusion. If a condition involving cryoglobulins is suspected, the sample may need special warm handling. Cryoglobulins are proteins that clump when blood becomes cold.

What happens during the test

A healthcare professional places a band around your upper arm and cleans a small area of skin. A needle is inserted into a vein, usually inside your elbow, and blood is collected into a tube.

The blood draw normally takes about five minutes. The tube is sent to a laboratory, where the serum is separated and tested.

You can usually return to normal activities immediately. If you feel faint during blood tests, tell the person collecting your sample so you can lie down.

Understanding your results

Immunofixation is mainly a pattern-based test, not a test with one universal normal range. A report may say that no monoclonal protein was detected. This means the laboratory did not find a distinct abnormal antibody band at the test's detection level.

If a monoclonal protein is found, the report may identify it as, for example, IgG kappa or IgM lambda. This describes the protein's antibody type. It does not by itself diagnose cancer or show how serious an underlying condition might be.

A polyclonal pattern means that many different antibodies are increased. This can occur with infection, inflammation, liver disease, or immune-system activity and is different from a single monoclonal protein.

Several small bands may be described as an oligoclonal pattern. Such patterns can occur during immune recovery, after a stem-cell transplant, or following some treatments.

Ranges and interpretation vary by laboratory, age, sex, pregnancy status, medicines, and clinical context. Results should be considered alongside SPEP, free light chains, blood counts, kidney function, calcium, symptoms, and previous results.

What affects the results

Several factors can change the pattern even when the laboratory has performed the test correctly.

Monoclonal antibody medicines can resemble a person's own monoclonal protein. Daratumumab and isatuximab are important examples. The laboratory may need treatment details or a special method to separate the medicine from the protein being monitored.

IVIG contains antibodies from many donors and can temporarily alter protein studies. Plasma-containing transfusions may also affect the pattern. Packed red blood cell transfusions are generally less likely to do so.

Treatment for an underlying condition may reduce a protein below the amount immunofixation can detect. Cryoglobulins may drop out of the sample if it cools before processing. A sample containing fibrinogen because it did not clot completely can sometimes produce a misleading band.

Kidney function strongly affects serum free light-chain levels, which are often interpreted with immunofixation. Reduced kidney function does not usually create a true monoclonal band, but it may complicate the overall assessment.

Pregnancy, age, inflammation, infection, and liver disease can change total antibody levels or create a broad polyclonal pattern. Ordinary meals, coffee, exercise, and the time of day generally have little direct effect on serum immunofixation.

Accuracy and limitations

Immunofixation can find smaller monoclonal proteins than routine SPEP and can identify their type. However, no single blood test finds every monoclonal protein disorder.

The test may miss a protein when the amount is very low, when mostly free light chains are being produced, or when the protein is lost from the sample. Standard panels may not fully identify uncommon antibody types without extra testing. Serum free light-chain testing or urine immunofixation may be better for some light-chain disorders.

A positive-looking band is not always evidence of an untreated disorder. Monoclonal antibody medicines, IVIG, fibrinogen, and temporary oligoclonal immune responses can produce misleading patterns.

Immunofixation does not accurately measure the amount of protein. SPEP, quantitative immunoglobulin tests, or serum free light-chain measurements are usually used for that purpose. It also cannot distinguish MGUS from myeloma or another condition without clinical

information and additional tests.

Risks and complications

The risks are those of a routine blood draw. You may have brief discomfort, a small bruise, or feel faint; significant complications are uncommon.

What happens next

If no monoclonal protein is detected, no further testing may be needed. If concern remains, your clinician may still request serum free light chains, urine testing, repeat blood work, or another investigation.

If a monoclonal protein is found, routine follow-up usually includes confirming the result and checking its amount. Blood counts, calcium, kidney function, urine studies, and sometimes imaging or a bone marrow biopsy may be considered. Many monoclonal proteins are monitored over time and do not require immediate treatment.

A positive immunofixation result alone is not usually an emergency. Arrange routine follow-up as advised so the result can be interpreted with your other findings.

Seek urgent medical help for new confusion, severe weakness, sudden vision changes, chest pain, or serious shortness of breath. Severe back pain with new leg weakness, numbness around the groin, or loss of bladder or bowel control requires emergency assessment. These symptoms are not caused by the test, but they should not wait for a routine appointment.

Common questions

Can I drink coffee before the test?

Usually, yes. Immunofixation does not normally require fasting. Avoid coffee only if you are also having another test that requires fasting.

Does the time of day matter?

Usually not. A sample can generally be collected at any time the laboratory is open.

Can I exercise beforehand?

Ordinary exercise is unlikely to change the result. Follow any separate instructions given for other tests being collected at the same visit.

Should I stop my medicines?

Do not stop prescribed medicines unless the clinician responsible for them tells you to. Make sure the laboratory knows about monoclonal antibody treatment, IVIG, and recent transfusions.

Is an abnormal result cancer?

Not necessarily. A monoclonal protein can occur in conditions that only need monitoring, as well as in conditions that may need treatment. Further testing is required to understand its cause.

Why might I need a urine immunofixation test too?

Some abnormal proteins, especially free light chains, may be easier to find in urine or with a serum free light-chain test. Using more than one method reduces the chance of missing a small or unusual protein.

Sources

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