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Intrinsic Factor Antibody

Also Known As: IF Antibody, IF Antibody Type 1 or Type 2, Intrinsic Factor Binding Antibody, Intrinsic Factor Blocking Antibody, Anti-Intrinsic Factor

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At a Glance

Why Get Tested?

To help diagnose pernicious anemia, the most common cause of vitamin B12 deficiency

When To Get Tested?

As part of an investigation, when you have anemia and/or neuropathy that may be due to a vitamin B12 deficiency; when you have red blood cells that are much larger than normal (macrocytic)

Sample Required?

A blood sample drawn from a vein in your arm

Test Preparation Needed?

You should wait at least 48 hours after receiving a vitamin B12 injection to have a blood sample taken. Some healthcare providers may prefer not to draw a blood sample for the test within 2 weeks of an injection.

What is being tested?

Intrinsic factor antibodies are proteins produced by the immune system that are associated with pernicious anemia. This test detects intrinsic factor antibody (IF antibody) circulating in blood.

Intrinsic factor is a protein produced by a type of specialized cells that line the stomach wall known as parietal cells. During digestion, stomach acids release vitamin B12 from food and bind to intrinsic factor to form a complex. The formation of this complex is necessary for the absorption of vitamin B12 in the small intestine.

Among having functional roles in the brain and nervous system, vitamin B12 is important in the production of red blood cells. Without sufficient intrinsic factor, vitamin B12 goes largely unabsorbed and the body cannot produce enough normal red blood cells, leading to anemia. Besides anemia, decrease in the numbers of neutrophils and platelets (neutropenia, thrombocytopenia) may also occur.

Anemia that is due to a lack of intrinsic factor is called pernicious anemia. This is primarily an autoimmune condition that occurs when the body's immune system targets its own tissues and develops antibodies directed against the parietal cells and/or the intrinsic factor. These antibodies can damage the parietal cells and disrupt intrinsic factor production or prevent intrinsic factor from carrying out its biological function.

Two types of IF antibodies can be tested by the laboratory:

- Intrinsic factor blocking antibody (type 1), which is more specific for pernicious anemia and is the one that is usually tested.
- Intrinsic factor binding antibody (type 2), which interferes with the uptake of the vitamin B12-instrinsic factor complex.

Common Questions

How is it used?

An intrinsic factor antibody (IF antibody) test may be used to help determine the cause of a vitamin B12 deficiency and to confirm a diagnosis of pernicious anemia.

Pernicious anemia is caused by vitamin B12 deficiency due to a lack of intrinsic factor. This condition occurs primarily when the body's immune system targets its own tissues and develops antibodies directed against the parietal cells and/or the intrinsic factor. These antibodies can

damage the parietal cells and disrupt intrinsic factor production or prevent intrinsic factor from carrying out its biological function. Intrinsic factor binds to vitamin B12, forming a complex and allowing its absorption in the small intestine. (For more, see the "What is being tested?" and the condition article on Vitamin B12 Deficiency.)

IF antibody testing is usually used in follow up after other laboratory tests, such as a vitamin B12 test, a methylmalonic acid test and a complete blood count (CBC), have established that a person has a vitamin B12 deficiency and associated anemia and/or neuropathy.

It may be used in conjunction with a test for parietal cell antibodies to aid in establishing a diagnosis.

There are two types of IF antibodies that may be tested:

- Intrinsic factor blocking antibody (type 1), which blocks the binding site of vitamin B12 to intrinsic factor. This is more specific for pernicious anemia and is the one that is usually tested.
- Intrinsic factor binding or precipitating antibody (type 2), which interferes with the uptake of the vitamin B12-instrinsic factor complex in the small intestine.

When is it ordered?

The intrinsic factor antibody (IF antibody) test is not a frequently ordered test. It may be ordered when a person has a vitamin B12 deficiency and when pernicious anemia is suspected, as when a person has signs and symptoms such as:

- Paleness
- Weakness, fatigue
- Numbness and tingling in the feet and/or hands
- Larger than normal red blood cells (RBCs); sometimes large RBCs are detected before the other signs and symptoms emerge, for example, with a complete blood count (CBC) during routine testing for a health examination.

These findings usually prompt vitamin B12 and folate testing and may lead to methylmalonic acid testing (an early indicator of vitamin B12 deficiency).

When a person has a decreased vitamin B12 level and increased methylmalonic acid and homocysteine levels, an IF antibody test is typically ordered.

What does the test result mean?

The results of intrinsic factor antibody (IF antibody) tests are often taken into consideration with the results of other laboratory tests to help make a diagnosis. When a person has a decreased vitamin B12 level and/or increased methylmalonic acid and homocysteine levels and has IF antibodies,

then it is likely that the person has pernicious anemia.

A negative test result does not necessarily mean that a person does not have pernicious anemia. As many as half of those affected will not have IF antibodies. When they are not present, the health practitioner may order a parietal cell antibody test to help establish the diagnosis. Parietal cell antibodies are not as specific as IF antibodies. They are present in about 90% of those with pernicious anemia but may also be present in a variety of other conditions and in up to 10% of the general population.

Should everyone have an intrinsic factor antibody test?

It is not intended as a general screening test. It is only performed to help determine the cause of a demonstrated vitamin B12 deficiency.

Can I have an intrinsic factor antibody test done at my doctor's office?

This test requires specialized equipment and is not offered by every laboratory. In most cases, your blood sample will need to be sent to a reference laboratory.

Can I get rid of intrinsic factor antibodies?

No, they are produced by your immune system and do not respond to lifestyle changes. The associated vitamin B12 deficiency, however, can usually be successfully treated and managed by vitamin B12 supplementation.

Is there anything else I should know?

Some people with autoimmune diseases such as type 1 diabetes, Hashimoto thyroiditis, Addison disease or Graves disease may have IF antibodies without having pernicious anemia. The IF antibody test is not used to diagnose or monitor these conditions.

Vitamin B12-associated anemia may take several years to develop as a normal person typically has large stores of B12 in reserve. Symptoms tend to emerge only when these stores become depleted.

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Elsewhere On The Web

American Society for Hematology: Anemia
NIH: Vitamin B12
National Heart, Lung and Blood Institute
MedlinePlus: Pernicious Anemia

View Sources

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2015 review performed by Boris Calderon, MD, DABCC, FACB, Staff Scientist, Clinical Center NIH.

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