TEST

Antimitochondrial antibody

A blood test that looks for antibodies commonly associated with primary biliary cholangitis

WHAT IT MEASURES
Antibodies targeting mitochondria, especially the M2 antigen

SAMPLE
Blood

FASTING NEEDED?
No

HOW LONG IT TAKES
Usually less than 10 minutes

RESULTS IN
Several days; timing differs by laboratory

USED FOR
Supporting diagnosis of primary biliary cholangitis

MAIN LIMITATION
A positive result alone does not diagnose liver disease

Overview

An antimitochondrial antibody test looks for antibodies that react with mitochondria. Mitochondria are small structures inside cells that help produce energy.

Antibodies normally help defend the body from infection. Antimitochondrial antibodies, often shortened to AMA, mistakenly recognize proteins found in the body's own cells. Many laboratories specifically test for the M2 type, which is strongly associated with a liver condition called primary biliary cholangitis.

Primary biliary cholangitis, or PBC, affects the small bile ducts within the liver. Bile ducts carry bile, a fluid that helps digest fats and remove waste. Damage to these ducts can cause bile to build up in the liver.

The AMA test is not used alone to diagnose PBC. Your result is interpreted alongside liver blood tests, symptoms, medical history and sometimes imaging or other antibody tests.

Why the test is ordered

The test is most often ordered when liver blood tests show a pattern suggesting reduced bile flow. A common finding is a raised alkaline phosphatase, or ALP. ALP is an enzyme found in the liver, bile ducts and bones.

Your clinician may also order the test if you have symptoms that could be related to bile duct disease, such as persistent itching, unusual tiredness, jaundice or discomfort in the upper-right abdomen. Jaundice means yellowing of the skin or whites of the eyes.

AMA testing may help:

AMA levels are generally not useful for measuring how active PBC is or whether treatment is working. Liver tests and other clinical information are more useful for follow-up.

- Support a diagnosis of PBC when liver tests are abnormal
- Investigate unexplained, persistent elevation of ALP
- Distinguish PBC from some other causes of liver or bile duct disease
- Guide the choice of additional blood tests, imaging or liver biopsy

Who should have the test

AMA testing is usually appropriate when there is a specific reason to suspect PBC. This may include a cholestatic liver-test pattern, meaning results suggest that bile is not flowing normally.

It may also be considered when symptoms, another autoimmune condition or a family history raise concern about PBC. However, it is not usually used as a general screening test for people without symptoms or abnormal liver results.

A positive AMA result found during unrelated testing does not necessarily mean that you have active liver disease. It needs to be reviewed with ALP and other liver tests. Some people with AMA do not have current evidence of PBC, although follow-up may be appropriate.

How to prepare

You usually do not need to fast. You can generally eat, drink water and take your usual medicines before the blood draw.

Tell the clinician or laboratory about prescription medicines, non-prescription medicines and supplements. Some laboratory methods can be affected by particular substances, including high-dose biotin in certain antibody assays. Do not stop a prescribed medicine unless the

clinician who manages it tells you to.

If other blood tests are being collected at the same time, their preparation instructions may be different. For example, a separate glucose or lipid test may require fasting.

Wear clothing that allows easy access to your upper arm. Let the person taking blood know if you have previously felt faint during blood tests.

What happens during the test

A healthcare professional places a band around your upper arm to make a vein easier to see. They clean the skin and insert a small needle into a vein, usually near the inside of the elbow.

Blood is collected into a tube and sent to a laboratory. The needle is then removed, and pressure is applied to the area. The collection usually takes less than 10 minutes.

The laboratory may use an immunoassay, which looks for antibodies against specific mitochondrial proteins. Some laboratories use indirect immunofluorescence, a method that examines the antibody's staining pattern under a microscope.

Understanding your results

Results may be reported as negative, positive or borderline. Some laboratories provide a number, concentration or titre. A titre describes how much a blood sample can be diluted before the antibody is no longer detected.

Reference ranges and interpretation vary by laboratory, testing method, age, sex, pregnancy status, medicines and clinical context. Use the range printed on your own report rather than comparing your number with one from another laboratory.

A negative result means AMA was not detected above the laboratory's cutoff. This makes PBC less likely, but it does not completely rule it out. A minority of people with PBC do not have detectable AMA.

A positive result means AMA was detected. When a clear positive result occurs with a persistent cholestatic liver-test pattern, it strongly supports PBC. A positive result without abnormal liver tests is less straightforward and does not establish a diagnosis by itself.

A borderline or weak positive result may need to be repeated or checked with a more specific test, such as an AMA-M2 assay. The next step depends on your liver results and the reason for testing.

The amount of AMA does not reliably show the severity of liver damage. A higher result does

not automatically mean more advanced disease.

What affects the results

The most important influences involve the testing method and the clinical setting rather than food, exercise or time of day.

Different laboratories use different mitochondrial targets, equipment and cutoffs. A weak result may therefore be positive in one laboratory and negative or borderline in another. Repeating the test with a different method can sometimes clarify an uncertain result.

Other factors include:

Pregnancy, recent exercise and the time of day do not usually have an important direct effect on AMA. They may affect other blood tests collected at the same appointment.

- Other autoimmune conditions: AMA may occasionally appear in people with conditions such as autoimmune hepatitis or systemic sclerosis
- Other liver conditions: A low-level positive result may occur without classic PBC
- Early or AMA-negative PBC: The antibody may be absent even when other findings suggest PBC
- Sample quality: Severe breakdown of blood cells, excess fat in the sample or other technical interference can affect some methods
- Medicines and supplements: Most do not change AMA itself, but some may interfere with a particular laboratory assay
- Recent transfusion: Transfused blood can occasionally complicate antibody testing, although this is not a common cause of an AMA result

Accuracy and limitations

Most people with PBC have detectable AMA, commonly the M2 type. However, the test can miss a minority of cases. A negative result is therefore not a complete exclusion when liver tests and symptoms still suggest PBC.

The test can also be positive when the person does not have current PBC. This is more likely to create confusion when testing people who have normal liver results and a low chance of the condition. The meaning of a positive result becomes much clearer when ALP is persistently raised and other causes of reduced bile flow have been considered.

If AMA is negative but PBC is still suspected, tests for other antibodies associated with PBC, including anti-gp210 or anti-sp100, may be useful. Imaging can look for blockage or disease in the larger bile ducts. A liver biopsy, which removes a small tissue sample, may be considered when blood tests are unclear or another liver condition may also be present.

AMA cannot show how much liver scarring is present. Other blood tests, ultrasound-based stiffness measurements or occasionally biopsy are better suited to that question.

Risks and complications

A blood draw may cause brief discomfort, a small bruise or minor bleeding at the needle site. Some people feel light-headed or faint, but serious complications are uncommon.

What happens next

If your result is negative and the other liver tests are normal, no further investigation may be needed. Follow-up depends on why the test was requested.

A positive or borderline result usually leads to routine review of ALP, bilirubin and other liver tests. Your clinician may repeat the antibody test, request a more specific assay or arrange liver imaging. Referral to a liver specialist may be appropriate if results suggest ongoing bile duct or liver disease.

A positive AMA result by itself is not usually an emergency. Arrange prompt medical assessment if you develop new jaundice, dark urine, pale stools or rapidly worsening itching.

Seek emergency care for vomiting blood, black tar-like stools, severe confusion, fainting, major breathing difficulty or severe abdominal pain. These symptoms require urgent assessment regardless of the AMA result.

Common questions

Can I drink coffee before the test?

Yes. AMA testing does not require fasting, so coffee is generally allowed. Avoid milk or sugar only if another test collected at the same time requires fasting.

Does the time of day matter?

No. AMA does not normally change enough during the day to require morning testing.

Can I exercise beforehand?

Yes. Exercise is not known to meaningfully alter AMA results. Strenuous exercise can affect some other liver or muscle-related blood tests, so follow any instructions given for the full set of tests.

Should I stop my medicines?

Usually not. Continue prescribed medicines unless the clinician managing them gives different instructions. Report supplements, especially high-dose biotin, because some laboratory methods may be vulnerable to interference.

Does a positive result mean I have PBC?

Not by itself. A positive result is interpreted with ALP and other liver tests, your symptoms and tests that exclude other causes of bile duct problems.

Will the test need to be repeated?

It may be repeated if the result is borderline, does not fit your other results or was measured using a less specific method. Repeated AMA levels are not usually used to track disease activity.

Sources

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