TEST

Serology for brucellosis

A blood test that looks for antibodies made in response to Brucella bacteria

WHAT IT MEASURES
Antibodies your immune system makes against Brucella bacteria

SAMPLE
Blood from a vein

FASTING NEEDED?
No

HOW LONG IT TAKES
Usually 5 to 10 minutes

RESULTS IN
Several days; longer for referral laboratories

USED FOR
Diagnosis and follow-up after certain exposures

MAIN LIMITATION
Early infection and cross-reactions can mislead results

Overview

Serology for brucellosis is a blood test that looks for antibodies against Brucella bacteria. Antibodies are proteins made by your immune system after exposure to an infection.

Several methods are available. Agglutination tests measure how strongly antibodies make prepared bacterial material clump together. Other tests, such as ELISA, may report specific antibody types called IgM and IgG.

Serology does not detect the bacteria directly. A positive result may reflect a current infection, a past infection, or a reaction to another bacterium with similar surface features. Results must be interpreted alongside your symptoms, exposures, and other tests.

Why the test is ordered

The test may help investigate brucellosis when you have compatible symptoms and a possible source of exposure. Relevant exposures include:

Serology may also be used after certain laboratory exposures. It is not usually a general

screening test for people without symptoms or a known exposure.

Antibody levels are not a dependable way to prove that treatment worked. They can remain detectable for months or longer after an infection has resolved.

- Drinking unpasteurized milk or eating products made from it
- Contact with livestock, animal birth tissues, or aborted animal material
- Hunting or handling feral swine
- Working with Brucella in a laboratory
- Living in or travelling to an area where brucellosis occurs

Who should have the test

A healthcare professional may offer testing if your symptoms and exposure history suggest that brucellosis is possible. Symptoms alone are not specific: fever, sweats, tiredness, joint pain, and loss of appetite can have many causes.

Testing may also be arranged through occupational health or public health services after a significant laboratory exposure. This can involve a baseline sample followed by additional samples over time.

Standard serology does not reliably detect every Brucella type. In particular, infection involving Brucella canis or the veterinary vaccine strain B. abortus RB51 may require different testing. Mention contact with dogs, veterinary vaccines, or laboratory cultures because it can change which test is appropriate.

How to prepare

You do not need to fast. You can usually eat, drink water or coffee, and take your regular medicines.

Tell the person who ordered the test about:

Do not stop a prescribed medicine unless the clinician responsible for it tells you to do so.

- When symptoms and possible exposure began
- Previous brucellosis or previous positive antibody tests
- Recent antibiotics like amoxicillin or doxycycline
- Medicines or conditions that suppress your immune system

- Recent immunoglobulin treatment or a plasma-containing transfusion
- Contact with veterinary vaccines or known Brucella species

What happens during the test

A healthcare worker cleans an area of skin, usually inside your elbow, and places a needle into a vein. A small amount of blood is collected into a tube. The blood draw usually takes a few minutes.

The laboratory separates the liquid part of the blood, called serum, and tests it for antibodies. The sample may be sent to a specialist or public health laboratory if local testing is unavailable or confirmation is needed.

Understanding your results

Results may be reported as negative, positive, reactive, or indeterminate. An agglutination result may be given as a titer , which describes the greatest dilution at which antibodies can still be detected.

A negative result means antibodies were not found at the test's reporting level. It does not completely exclude infection, especially when the sample was collected soon after exposure or symptoms began.

A positive result means antibodies were detected. It does not, by itself, prove that live bacteria are currently present. Previous infection and cross-reactions can also produce positive results.

An indeterminate or borderline result is not clearly positive or negative. Another sample may be needed. A clear rise in antibody levels between an early sample and one collected later can be more informative than a single result.

IgM and IgG results should not be treated as a precise infection clock. IgM may suggest a more recent immune response, while IgG often develops later and may persist, but exceptions and false reactions occur.

There is no universal normal range or positive cutoff for every method. Ranges and interpretation vary by laboratory, assay, age, sex, pregnancy status, medicines, timing, and clinical context.

What affects the results

Timing is one of the main influences. Your body may not have produced enough antibodies during the first days of illness, causing an early false-negative result. A repeat sample collected later may detect a developing response.

Previous brucellosis can leave antibodies behind. This may make a result positive even when there is no current infection.

Some other bacteria have surface structures similar to those of Brucella . Antibodies produced against organisms such as Yersinia enterocolitica O:9 or Francisella tularensis can cross-react in some assays and produce a false-positive result.

The species also matters. Common serology is designed mainly for smooth Brucella species and may miss B. canis and strain RB51. A different antibody test, culture, or molecular test may be needed.

Very high antibody levels can occasionally cause an apparently negative agglutination result. This is called the prozone effect . Laboratories can check for it by testing the sample at further dilutions when suspicion remains high.

Immune-suppressing medicines or conditions may weaken antibody production. Recent immunoglobulin treatment or a transfusion containing substantial plasma can sometimes introduce antibodies made by another person.

Antibiotics are more likely to reduce the chance of a positive blood culture than to erase antibodies immediately. Food, coffee, exercise, time of day, kidney function, and pregnancy do not usually alter the antibody measurement directly, although pregnancy and other health factors still affect the overall clinical assessment.

Accuracy and limitations

Accuracy changes with the test method, the Brucella species, local patterns of exposure, and when the sample is collected. There is no single percentage that describes every brucellosis serology test.

The test can miss an infection when it is performed too early, when antibody production is reduced, or when the responsible species is not detected well by the assay. Localized or long-lasting infection may also be harder to interpret from a single antibody level.

The test can say "positive" when there is no active brucellosis because of an old infection or cross-reaction. In someone with little chance of exposure, an unexpected positive result therefore needs careful confirmation.

Blood or tissue culture can directly identify Brucella , but culture can also miss the infection,

particularly after antibiotics, and requires special laboratory safety measures. Molecular tests such as PCR may be useful in specialist settings, but availability and validation differ. Often the best assessment combines exposure history, serology, culture or molecular testing, and the pattern over time.

Risks and complications

A blood draw may cause brief pain, a small bruise, or light-headedness. Persistent bleeding, infection at the needle site, and other complications are uncommon.

What happens next

A negative early result may be followed by another blood sample, sometimes at least two weeks after the first. Routine follow-up may also include blood cultures, molecular testing, or tests looking for other causes of your symptoms.

A positive result is assessed with your exposure history and symptoms. It may be confirmed by a specialist or public health laboratory. Do not start, stop, or change antibiotics based only on an antibody report.

Seek prompt medical advice if you have ongoing fever or worsening symptoms while waiting for follow-up. Seek emergency care for severe breathing difficulty, chest pain, fainting, new confusion, a seizure, or sudden weakness. These symptoms have many possible causes and require urgent assessment rather than interpretation of the serology result alone.

Common questions

Can I drink coffee before the test?

Yes. Fasting is not needed, so coffee does not usually affect the result.

Does the time of day matter?

No. Brucellosis antibodies do not normally change enough during the day to require a specific collection time.

Can I exercise beforehand?

Yes. Ordinary exercise does not meaningfully alter brucellosis antibody levels. If exercise makes you dehydrated or likely to feel faint during blood draws, drink water and rest first.

Does a positive result mean I definitely have brucellosis?

No. It may represent current infection, past infection, or a cross-reaction. Your exposure history, symptoms, test method, and any confirmatory results are important.

Why do I need a second blood test?

Antibodies may be absent early in an infection. Comparing two samples can show whether the antibody level is rising, stable, or falling.

Do antibiotics affect the result?

They do not usually make antibodies disappear quickly, but they can reduce the chance of growing Brucella from a blood culture. Tell the healthcare team about antibiotics taken before testing.

Sources

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