TEST

Pericardial fluid culture

A pericardial fluid culture checks fluid around the heart for infection-causing organisms

WHAT IT MEASURES
Growth of bacteria, fungi, or mycobacteria in fluid around the heart

SAMPLE
Fluid from the sac around the heart

FASTING NEEDED?
Sometimes, before sedation or a planned procedure

HOW LONG IT TAKES
About 30-60 minutes for fluid collection

RESULTS IN
Several days; specialized cultures may take weeks, varying by laboratory

USED FOR
Diagnosing infection around the heart

MAIN LIMITATION
Antibiotics before collection can prevent organisms from growing

Overview

A pericardial fluid culture looks for microorganisms in the fluid surrounding your heart. These may include bacteria, fungi, or mycobacteria, the group that includes the organism causing tuberculosis.

Your heart sits inside a thin, two-layered sac called the pericardium. A small amount of fluid normally reduces friction between these layers. An abnormal collection is called a pericardial effusion.

The sample is usually collected during pericardiocentesis. In this procedure, a clinician guides a needle and often a small tube called a catheter into the pericardial space. Imaging, usually ultrasound of the heart, helps guide the procedure.

In the laboratory, the fluid is placed in conditions that encourage microorganisms to grow. Different cultures may be needed for ordinary bacteria, anaerobic bacteria that grow without oxygen, fungi, and mycobacteria. A Gram stain, cell count, chemistry tests, or molecular tests may be performed on the same fluid.

Why the test is ordered

The culture is ordered when an infection of the pericardium is possible. This infection can cause inflammation called pericarditis and may lead to an effusion.

Reasons for considering infection can include fever, inflammation seen on blood tests, imaging findings, pus-like fluid, or an effusion without a clear explanation. The test may also be ordered when tuberculosis or a fungal infection is possible because of your medical history, immune system, exposures, or location.

The culture can help identify a specific organism. Laboratory testing may then show which antimicrobial medicines are likely to work against it.

A culture is not usually the only test performed. The healthcare team may also request blood cultures, imaging, and tests of the fluid for protein, glucose, blood cells, cancer cells, or genetic material from microorganisms.

Who should have the test

This test may be appropriate if you have a pericardial effusion that is being drained and infection is suspected. It may also be considered when the cause of a significant or persistent effusion is unclear.

Not every effusion needs to be sampled. Small or clearly explained effusions may be followed with imaging instead. The decision also considers whether enough fluid can be reached safely and whether drainage is needed to relieve pressure on the heart.

Pericardiocentesis may be performed urgently when fluid is stopping the heart from filling normally. This dangerous pressure is called cardiac tamponade. In that situation, removing the fluid is the immediate priority; culture is one of several tests that may be performed afterward.

How to prepare

Preparation depends on whether the procedure is planned or urgent. Follow the instructions from the team performing it.

You may be asked not to eat or drink for several hours if sedation is planned. Ask whether clear liquids, including water or black coffee, are allowed. Instructions differ between facilities and types of sedation.

Tell the team about:

Do not stop a prescribed medicine unless the healthcare team gives you specific instructions. If the procedure is urgent, there may not be time for the usual preparation.

- Blood thinners like warfarin or apixaban , aspirin, and other medicines or supplements
- Bleeding problems or low platelet counts
- Allergies, especially to medicines, antiseptics, or contrast material
- Pregnancy or the possibility of pregnancy
- Recent or current antibiotic like amoxicillin or doxycycline , antifungal like fluconazole or terbinafine , or tuberculosis treatment

What happens during the test

You will usually lie on a procedure table with your upper body raised. Staff will monitor your heart rhythm, blood pressure, and oxygen level. You may receive oxygen, a sedative, or medicine for discomfort.

The skin on your chest is cleaned, and a local anaesthetic numbs the area. Using heart ultrasound and sometimes other imaging, the clinician guides a needle into the fluid around the heart. You may feel pressure, but you should report sharp pain or worsening breathlessness.

Fluid is drawn into sterile containers. A flexible catheter may be left in place temporarily if more fluid needs to drain.

The sample is sent promptly to the laboratory. Routine bacterial culture and specialized fungal or mycobacterial cultures may be handled differently. After the procedure, you will be monitored and may have another heart ultrasound or chest imaging.

Understanding your results

A negative result is often reported as "no growth." This means no organism grew under the culture conditions used. It does not completely exclude infection.

A positive result names the organism that grew. For some bacteria or fungi, the report may also include susceptibility results. These show whether the organism appears sensitive or resistant to particular medicines in the laboratory.

Some organisms found on the skin can accidentally enter a sample during collection or handling. If one of these grows, the result must be considered alongside the appearance of the fluid, other test results, symptoms, and whether the same organism was found in blood

cultures.

There is no universal normal number for this test. Results are mainly reported as growth or no growth. Interpretation varies by laboratory, age, sex, pregnancy status, medicines, immune function, and clinical context.

What affects the results

Antibiotics taken before the fluid is collected are a major influence. They may reduce the number of living bacteria enough to produce no growth even when infection is present. Antifungal or tuberculosis medicines can have a similar effect.

Other factors include:

Age, pregnancy, kidney function, recent exercise, meals, coffee, and the time of day do not usually change whether an organism grows. However, these factors can affect procedure planning or the interpretation of other tests. A recent transfusion does not usually alter the culture itself.

- Too little fluid being available for all requested cultures
- Delays or incorrect temperatures during transport
- Failure to request the special conditions needed by a suspected organism
- Low numbers of organisms or infection confined to another pocket of fluid
- Skin organisms contaminating the sample during collection
- Blood entering the sample during the procedure

Accuracy and limitations

A positive culture from a properly collected sample can provide strong evidence of infection, particularly when the organism fits the overall clinical picture. It can also guide medicine selection.

The test can miss an infection. This is more likely after antimicrobial treatment, when very few organisms are present, or when the organism is difficult or slow to grow. Some causes of infection require special media and longer incubation. A routine bacterial culture will not reliably detect tuberculosis, fungi, or viruses unless the appropriate tests are requested.

The test can also appear positive when the pericardial space is not infected. This usually happens because an organism from the skin or environment contaminated the sample.

A Gram stain may provide a faster clue but can miss organisms. Molecular tests can sometimes detect microbial genetic material when culture is negative, although availability and interpretation vary. Pericardial biopsy, blood cultures, or tests for tuberculosis may be more useful in selected situations.

Risks and complications

The culture itself does not add meaningful risk once fluid has been collected. The important risks come from pericardiocentesis.

Minor effects can include soreness, bruising, or bleeding where the needle entered. Sedation may cause temporary sleepiness, nausea, or changes in breathing or blood pressure.

Less common but important complications include an abnormal heart rhythm, bleeding into the pericardial space, a collapsed lung, infection, or injury to the heart, a blood vessel, or a nearby organ. Imaging guidance and continuous monitoring help reduce these risks.

Seek emergency help after leaving the facility if you develop severe or rapidly worsening chest pain, major difficulty breathing, fainting, confusion, or heavy bleeding.

Contact the healthcare team promptly for fever, increasing redness or swelling at the procedure site, drainage from the wound, worsening mild breathlessness, or a fast or irregular heartbeat. Mild soreness that is improving can usually be discussed at routine follow-up.

What happens next

Routine bacterial culture results may be released in stages. An early report may later change as an organism grows and is identified. Susceptibility testing can take additional time. Fungal and mycobacterial cultures often require longer observation.

If an organism grows, the result is assessed with your symptoms, blood tests, imaging, and other fluid studies. Treatment may be started or adjusted based on the full picture rather than the culture alone.

If no organism grows, the team may still consider infection if other evidence supports it. They may request molecular testing, repeat blood cultures, testing for tuberculosis, or a pericardial biopsy. Non-infectious causes of the effusion may also be investigated.

Follow-up may include checking the catheter site, reviewing final culture reports, and repeating an ultrasound to see whether fluid is returning.

Common questions

Can I drink coffee before the test?

Possibly, but not if your sedation instructions prohibit it. Black coffee may count as a clear liquid in some facilities and not in others. Follow the specific fasting instructions you receive.

Does the time of day matter?

No. Microorganisms do not become easier or harder to culture at a particular time of day. Procedure timing is based on urgency, staffing, and preparation.

Can I exercise beforehand?

Light activity does not change the culture result. Avoid strenuous exercise if you have chest discomfort, shortness of breath, or have been told to limit activity because of the effusion.

Should I stop antibiotics before the culture?

Do not stop them yourself. Antibiotics can reduce culture growth, but delaying or interrupting treatment may be unsafe. The healthcare team will decide how to balance treatment with sample collection.

Why are my results taking so long?

Some bacteria grow within days, while fungi and mycobacteria can take much longer. The laboratory may also need extra time to identify the organism and test which medicines work against it.

Can a negative culture rule out infection?

No. A negative result lowers the evidence for infection but cannot exclude it, especially after antimicrobial treatment or when an organism needs specialized testing.

Sources

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