TEST

Peritoneal fluid analysis

Peritoneal fluid analysis examines fluid removed from the abdomen for signs of infection, bleeding, cancer, or other causes of fluid buildup.

WHAT IT MEASURES
Cells, proteins, microbes, and other substances in abdominal fluid

SAMPLE
Fluid removed from the peritoneal space

FASTING NEEDED?
Usually no; fasting may be required if sedation is planned

HOW LONG IT TAKES
Usually 20 to 45 minutes; longer for large-volume drainage

RESULTS IN
Hours to several days, varying by laboratory and test

USED FOR
Diagnosing infection, bleeding, cancer, or causes of abdominal fluid

MAIN LIMITATION
Prior antibiotics can make infection cultures falsely negative

Overview

Peritoneal fluid analysis is a group of laboratory tests performed on fluid from inside your abdomen. The peritoneum is the thin tissue that lines the abdominal wall and covers many abdominal organs.

Normally, only a small amount of fluid is present. A larger buildup is called ascites . Fluid is usually collected with a procedure called paracentesis , in which a needle or thin tube is passed through the abdominal wall.

The laboratory may examine the fluid's appearance and measure its cells, albumin, total protein, and other substances. It may also test for bacteria or cancer cells. The exact tests depend on why the fluid developed.

Peritoneal dialysis fluid can also be tested, especially when infection is suspected. In that situation, the sample may be collected through the existing dialysis catheter rather than by paracentesis.

Why the test is ordered

The test helps narrow down why fluid has collected in the abdomen. It cannot establish every cause by itself.

It may be ordered to:

Testing may be needed promptly if ascites occurs with fever, new abdominal pain, confusion, low blood pressure, worsening kidney function, or a sudden decline in health. Infection can sometimes occur without strong abdominal symptoms.

Paracentesis may also remove fluid to ease pressure, discomfort, or breathlessness. This is called therapeutic paracentesis . Laboratory testing and symptom-relieving drainage can happen during the same procedure.

- Look for infection in the fluid
- Investigate new or unexplained ascites
- Check worsening ascites or illness in someone with liver disease
- Look for bleeding into the abdomen
- Help assess possible cancer involving the abdominal lining
- Investigate less common causes, including pancreatic or lymphatic fluid leaks

Who should have the test

A healthcare professional may suggest the test if you have new ascites, an unexplained change in existing ascites, or findings that could indicate infection or another complication.

It may also be appropriate when scans show abdominal fluid and the cause remains uncertain. People receiving peritoneal dialysis may need fluid testing if the drained fluid becomes cloudy or they develop abdominal pain, fever, or other signs of possible infection.

Not everyone with a small amount of fluid on a scan needs sampling. The decision considers the amount and location of fluid, your symptoms, medical history, medicines, and whether the procedure can be performed safely.

How to prepare

Fasting is usually unnecessary when paracentesis is performed with local anaesthetic alone. Follow the instructions from your procedure unit because fasting may be required if sedation

or another procedure is planned.

Tell the team about:

Do not stop prescribed medicine unless the team arranging the test tells you to. You may have blood tests beforehand, but abnormal clotting results do not automatically mean the procedure cannot be done.

You will usually be asked to empty your bladder. Ultrasound may be used to locate a safe pocket of fluid and avoid nearby organs or blood vessels.

- Blood-thinning or antiplatelet medicines
- Bleeding disorders or previous procedure-related bleeding
- Medicine, antiseptic, adhesive, or latex allergies
- Pregnancy or possible pregnancy
- Previous abdominal surgery

What happens during the test

You will usually lie on your back or slightly turned to one side. Your blood pressure, pulse, and sometimes oxygen level may be checked.

The skin is cleaned, and local anaesthetic is injected to numb the area. This may sting briefly. A needle or thin flexible tube is then passed into the fluid, often with ultrasound guidance.

A small amount may be collected for testing. If fluid is also being removed to relieve symptoms, drainage takes longer. Samples are placed in appropriate containers. When infection is suspected, some fluid may be placed directly into blood-culture bottles to improve the chance of finding bacteria.

The needle or tube is removed, and a dressing is applied. If a large volume is drained, your team may monitor you for longer and may give intravenous albumin according to the amount removed and your clinical situation.

Understanding your results

Your report may contain several results rather than one overall answer.

A cell count measures red and white blood cells. Neutrophils, also called polymorphonuclear cells or PMNs, are white blood cells that increase with inflammation. In people with cirrhosis and ascites, a PMN count of 250 cells per microlitre or more is commonly used to identify fluid

that requires treatment for possible spontaneous bacterial peritonitis.

A culture looks for bacteria or fungi. If an organism grows, the laboratory may test which antimicrobial medicines are likely to work. A negative culture does not always exclude infection.

Albumin is a blood protein. The fluid albumin result may be compared with a blood albumin result taken around the same time. This calculation is called the serum-ascites albumin gradient , or SAAG. A higher gradient commonly points toward increased pressure in the liver's blood vessels, called portal hypertension. It does not identify the exact disease causing that pressure.

Total protein can provide additional clues. Other tests may include:

Ranges and interpretation vary by laboratory, age, sex, pregnancy status, medicines, and clinical context. Your results should be considered alongside blood tests, imaging, symptoms, and medical history.

- Cytology to look for cancer cells
- Amylase when a pancreatic leak is considered
- Triglycerides when milky lymphatic fluid is suspected
- Glucose or lactate dehydrogenase in selected cases

What affects the results

Antibiotics like amoxicillin or doxycycline taken before collection can stop bacteria from growing in culture, even when infection is present. Tell the team if you recently started antibiotics.

A needle can pass through a small blood vessel during collection. This is called a traumatic tap . Blood introduced this way can increase the measured red and white cell counts and make the fluid appear bloody without internal bleeding.

Delays in transporting or processing the sample can damage cells and reduce the chance of recovering bacteria. Placing fluid into culture bottles promptly at the bedside may improve bacterial detection.

The SAAG is most useful when the blood and fluid albumin samples are taken close together. Major changes in blood albumin between the two samples can make the calculation misleading.

A sample from one pocket of fluid may not represent another pocket, especially when fluid is divided into separate areas by scar tissue or inflammation. Prior surgery, recent abdominal

procedures, peritoneal dialysis, and mixed causes of ascites can also complicate interpretation.

Accuracy and limitations

There is no single accuracy figure for peritoneal fluid analysis because it includes several tests used for different conditions.

A high neutrophil count can correctly identify important inflammation, but it does not always reveal its cause. Infection, bowel inflammation, pancreatitis, and other abdominal conditions may produce overlapping findings.

Cultures sometimes miss infection, particularly after antibiotics, when few bacteria are present, or when collection and transport are delayed. Contamination during collection can occasionally make a culture appear positive when the organism was not causing infection.

Finding cancer cells in the fluid strongly supports cancer involving the peritoneum. However, cytology can miss cancer because some tumours release few cells. A negative result therefore does not rule it out.

SAAG and protein measurements classify patterns of fluid buildup rather than diagnose one specific disease. Mixed conditions, very low blood albumin, or samples taken at different times may produce an unclear pattern.

If concern remains despite a negative result, repeat sampling, imaging, endoscopy, or a tissue biopsy may be more informative. Laparoscopy, which uses a camera inside the abdomen, may be considered when direct inspection or biopsy is needed.

Risks and complications

Mild soreness, a small bruise, or temporary leakage from the puncture site can occur. Some people feel light-headed during or shortly after the procedure.

Less common complications include bleeding, infection, injury to an abdominal organ, or a fall in blood pressure. Removing a large volume can affect circulation and kidney function, so additional monitoring or treatment may be needed. Ultrasound guidance helps reduce avoidable injury.

Contact the procedure team promptly for persistent leakage, increasing redness, worsening pain, or a new fever. Seek urgent medical care for severe abdominal pain, heavy bleeding, fainting, marked weakness, difficulty breathing, or rapidly increasing abdominal swelling.

What happens next

Some results, such as the cell count, may be available within hours. Cultures and cytology usually take longer.

If the cell count suggests infection, treatment may begin before the culture is complete. This does not mean the final cause is already known; waiting for bacterial growth could delay necessary care.

Routine follow-up may include reviewing the full laboratory report, blood tests, and imaging. Further care depends on the cause of the fluid and whether it returns. If results are unclear but symptoms continue, another sample or a different test may be needed.

Common questions

Can I eat or drink coffee before the test?

Usually, yes. Paracentesis with local anaesthetic normally does not require fasting. Do not eat or drink if your procedure unit has given fasting instructions for sedation or another planned procedure.

Does the time of day matter?

Usually not. If albumin is being compared between blood and fluid, the samples should be collected close together, ideally during the same assessment.

Can I exercise beforehand?

Ordinary activity does not usually alter the laboratory results. Follow any instructions about activity if you are unwell, have a large amount of fluid, or are having a larger-volume drainage.

Will the procedure hurt?

The local anaesthetic may sting, and you may feel pressure as the needle or tube enters. Tell the team if you feel sharp or increasing pain.

Can I drive home afterward?

This depends on whether you received sedation, how much fluid was removed, and how you feel afterward. Arrange transport if sedation is planned or the procedure unit advises you not to drive.

How much fluid will be removed?

Only a small sample is needed for testing. More fluid may be removed if the procedure is also intended to relieve pressure or breathlessness.

Sources

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