TEST

CSF myelin basic protein

This test measures a protein released into spinal fluid when the protective covering around brain and spinal cord nerves is damaged.

WHAT IT MEASURES
Myelin basic protein released when central nervous system myelin breaks down

SAMPLE
Cerebrospinal fluid from a lumbar puncture

FASTING NEEDED?
No, unless sedation requires it

HOW LONG IT TAKES
About 30 to 60 minutes, plus any observation

RESULTS IN
Usually several days; timing varies by laboratory

USED FOR
Supporting diagnosis of central nervous system myelin damage

MAIN LIMITATION
Elevated levels show myelin injury, not its cause

Overview

CSF myelin basic protein is a laboratory test performed on cerebrospinal fluid, often shortened to CSF. This clear fluid surrounds your brain and spinal cord.

Myelin is the protective, fatty covering around many nerve fibres. It helps electrical signals travel efficiently through the brain and spinal cord. Myelin basic protein is one of the proteins that helps form this covering.

When myelin is damaged, myelin basic protein can be released into the CSF. A raised result may therefore provide evidence of recent or ongoing myelin breakdown in the central nervous system, which includes the brain and spinal cord.

The result does not identify the cause of the damage. The test is now used less often than magnetic resonance imaging, known as MRI, and other CSF tests when conditions such as multiple sclerosis are being investigated.

Why the test is ordered

Your clinician may order this test when your symptoms, examination or imaging suggest damage to myelin in the brain or spinal cord. It may form one part of an investigation for an inflammatory or demyelinating condition. "Demyelinating" means damaging or removing myelin.

An elevated level may also occur after other types of central nervous system injury, including a stroke, head or spinal trauma, infection, inflammation or surgery. For that reason, the test cannot diagnose multiple sclerosis or another specific condition by itself.

It may be ordered with tests such as:

The combination chosen will be based on the reason for your investigation.

- CSF cell counts, protein and glucose
- Oligoclonal bands and an immunoglobulin G, or IgG, index
- Tests for infection
- MRI of the brain or spinal cord

Who should have the test

This is not a routine screening test. It may be appropriate if a specialist needs more information about possible myelin injury and a lumbar puncture is already planned or considered necessary.

You may not need this particular measurement if MRI and other CSF findings can answer the clinical question more clearly. Testing decisions take account of your symptoms, examination, previous results and whether the result is likely to change your care.

A lumbar puncture may need to be delayed or approached differently if you have a bleeding problem, take certain blood-thinning medicines, have an infection near the needle site or have signs of increased pressure around the brain. Your clinical team will assess these issues before the procedure.

How to prepare

Fasting is not usually required. You can generally eat and drink normally, including coffee, unless your clinic gives different instructions. Fasting may be necessary if you will receive sedation.

Tell the clinical team about all medicines and supplements you take. This is especially important for anticoagulants and antiplatelet medicines, which reduce blood clotting. Do not stop a prescribed medicine unless the clinician arranging the procedure tells you to do so.

Also mention bleeding disorders, allergies to local anaesthetic, previous problems with lumbar punctures, pregnancy or the possibility of pregnancy. Depending on your circumstances, blood tests or brain imaging may be needed first.

Wear comfortable clothing. Ask whether you need someone to take you home, particularly if sedation is planned.

What happens during the test

CSF is collected through a lumbar puncture, sometimes called a spinal tap. You will usually lie on your side with your knees drawn up or sit while leaning forward. This position opens the spaces between the bones in your lower back.

The skin is cleaned, and local anaesthetic is injected to numb the area. A thin needle is then passed between two lower-back bones into the space containing CSF. The needle is placed below the usual end of the spinal cord.

You may feel pressure, but you should tell the clinician if you have significant pain. Brief tingling down a leg can occur if the needle passes near a nerve.

A small amount of fluid is collected into sterile tubes. The needle is removed and a dressing is applied. The collection itself often takes several minutes, although positioning, preparation and observation make the appointment longer.

Understanding your results

Your report will show the measured myelin basic protein level and the laboratory's reference interval. Units, testing methods and reporting limits can differ between laboratories, so compare the result only with the range printed on your report.

A result within the laboratory's range means the test did not detect increased myelin basic protein at that time. It does not completely rule out a condition affecting myelin. The amount released may be too small to detect, or the sample may have been collected outside the period when the level was raised.

An elevated result supports the presence of myelin breakdown or another central nervous system injury. It does not show where the damage is, how extensive it is or what caused it.

Results must be interpreted with your symptoms, examination, MRI findings and other CSF tests.

Ranges and interpretation vary by laboratory, age, sex, pregnancy status, medicines and clinical context. Not all of these factors are known to directly change CSF myelin basic protein, but they may affect how the overall investigation is interpreted.

What affects the results

Timing is especially important. Myelin basic protein may rise after an injury and later fall, even though the underlying condition still needs evaluation. A sample taken too early or after the active phase may not show an increase.

Other central nervous system events can raise the level without indicating a particular demyelinating disease. These include a recent stroke, head or spinal injury, infection, inflammation, seizure-related injury or neurosurgery.

Treatment may also matter. Corticosteroids or other medicines that reduce active inflammation could reduce ongoing myelin damage over time. This is a biological change, not a laboratory error.

A difficult lumbar puncture can introduce blood into the sample. Blood contamination and poor sample handling may complicate CSF interpretation, although the effect depends on the assay and other findings.

Food, coffee, the time of day, ordinary exercise, kidney function and a recent blood transfusion are not recognised as major direct influences on this measurement. Laboratory method and sample timing are usually more important.

Accuracy and limitations

The test can detect myelin basic protein when enough is present in the sample, but there is no single performance rate that applies to every condition, laboratory method or stage of illness.

It can miss myelin injury when little protein is released or when the lumbar puncture is performed before or after the detectable period. A normal result therefore cannot reliably exclude multiple sclerosis or another disorder affecting myelin.

It can also be positive when the suspected diagnosis is not present. This is because myelin basic protein may rise after several kinds of brain or spinal cord damage. In other words, the test can show that injury has occurred without showing why.

For suspected multiple sclerosis, MRI and CSF oligoclonal bands usually provide more specific diagnostic information. Tests for infection, vascular imaging or other scans may be better when infection, stroke or trauma is the main concern.

Risks and complications

Most risks come from the lumbar puncture rather than the laboratory measurement. Temporary back soreness, a small bruise and feeling faint can occur.

Some people develop a headache that is worse when sitting or standing and improves when lying down. It often settles with time, fluids and ordinary pain relief, but a persistent or severe headache may require treatment.

Bleeding or infection around the needle site is uncommon. Serious neurological complications are rare when people are assessed properly before the procedure.

Contact your clinical team promptly if you develop a worsening headache, fever, increasing back pain, redness or fluid leaking from the puncture site. Seek urgent medical help for new weakness, severe confusion, loss of bladder or bowel control, or rapidly worsening neurological symptoms.

What happens next

Routine follow-up usually involves reviewing this result alongside your MRI, other CSF measurements and clinical history. An isolated high or normal result should not be interpreted on its own.

Your clinician may recommend further imaging, blood tests, infection testing or specialist review. Sometimes no additional testing is needed if the wider investigation already provides a clear explanation.

A raised level does not automatically mean treatment is required. Management is directed at the underlying cause, not at the myelin basic protein number itself.

Do not wait for a routine results appointment if you develop new or rapidly worsening weakness, difficulty speaking, loss of vision, severe confusion or another sudden neurological change. These symptoms need urgent assessment regardless of the test result.

Common questions

Can I drink coffee before the test?

Usually, yes. Coffee does not appear to directly affect CSF myelin basic protein. Follow different instructions if you are having sedation or your clinic has asked you to fast.

Does the time of day matter?

There is no standard requirement to collect the sample at a particular time of day. Timing in relation to the suspected brain or spinal cord injury is more important.

Can I exercise beforehand?

Ordinary exercise is not known to meaningfully change the result. If exercise worsens your symptoms or you are being assessed for an acute problem, follow the advice given by your clinical team.

Can this test diagnose multiple sclerosis?

No. A raised level can support evidence of myelin damage, but it is not specific to multiple sclerosis. MRI, oligoclonal bands, your symptoms and neurological examination are generally more informative.

How long should I rest after the lumbar puncture?

Follow the instructions from the clinic that performed it. You may be observed briefly and advised to avoid strenuous activity for the rest of the day. Routine prolonged bed rest has not been shown to prevent every post-lumbar-puncture headache.

Will I need the test repeated?

Not usually. It may be repeated if timing affected the first result or if a specialist needs to assess a new episode, but MRI and other tests are often more useful for follow-up.

Sources

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