

Lumbar puncture to rule out a bleed on the brain after a normal CT head scan

Emergency & Specialist Medicine

Information for Patients

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Your CT head scan did not show a 'bleed on the brain', which is bleeding in the space between your brain and the surrounding membrane (also known as a subarachnoid haemorrhage). This is very reassuring.

Some research has suggested that CT scans may miss a small number of bleeds on the brain and so doctors commonly recommend a lumbar puncture to make sure.

What is a lumbar puncture (LP)?

A lumbar puncture (LP) is where a fine needle is inserted into the spine to collect a sample of the fluid that circulates within and around the brain and spinal cord.

It is capable of detecting tiny amounts of blood that may be invisible on the CT scan.

What are the risks of a lumbar puncture?

While an LP can help with diagnosis, it can have some side effects. These include:

- Headache - 40%
- Backache - 35%
- Headache for up to a year, nerve root injury or meningitis - together around 0.3%
- A blood clot near the spinal cord - risk is very low

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Do I need to have a lumbar puncture?

The risks of the side effects of an LP need to be weighed up against the risk of missing the more serious kind of bleed on the brain; the kind caused by an abnormal bulge in a blood vessel of the brain (a ruptured aneurysm).

Ruptured aneurysms require a procedure by a brain surgeon or X-ray specialist within the first few days. We know that results are sometimes not as good if the diagnosis is missed and treatment delayed (e.g. by not doing an LP). But we also know that the few subarachnoid haemorrhages that are so small that they remain invisible on CT are usually not caused by an aneurysm, and most clear up without treatment.

Modern CT scans are much better at detecting subarachnoid haemorrhage, than when the mentioned research was carried out, especially if done within 48 hours of the headache starting:

- If CT scan is done within 6 hours, we can be 100% confident that an LP is not needed.
- If CT scan is done between 6 and 48 hours, it would require more than 100 (possibly even up to 500) patients to have an LP before a single ruptured aneurysm is found, unless there are other high risk factors such as brain aneurysms found in close family members.
- If the CT scan is done **AFTER** 48 hours, the above figure drops to below 100, so we still routinely offer LP to patients in this situation.

Putting all this information together, we believe that the risk and discomfort of having an LP outweighs the risk of missing a ruptured brain aneurysm in your case, and would advise against it.

But we believe that your views are important. Please let us know if you still wish to have an LP.

We may have to consider an LP in the unlikely event that your symptoms do not settle after you have been discharged, and you need to return to hospital for further assessment.

Further information

Please talk to one of the doctors from the team looking after you if you have any further questions about anything mentioned in this information sheet.

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