Young Woman With Headache Several Days After Lumbar Puncture

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A 24-year-old woman complains of a severe, throbbing headache that is present when she is upright and is relieved when she lies down. When she is upright, she also experiences dizziness, blurred vision, light sensitivity, nausea, and occasional diplopia.

THE CASE:
A 24-year-old woman complains of a severe, throbbing headache that is present when she is upright and is relieved when she lies down. When she is upright, she also experiences dizziness, blurred vision, light sensitivity, nausea, and occasional diplopia. She had a lumbar puncture 5 days earlier as part of an emergency department (ED) workup for a severe headache that was associated with photophobia, nausea, vomiting, and dizziness. The results of the puncture showed no evidence of an infectious process or hemorrhage; results of a CT scan of the brain were also negative. She was given intramuscular morphine, which partially relieved the pain, and then she was discharged. She was doing well until 2 days after the lumbar puncture, when she experienced a severe headache after getting out of bed in the morning. She has a history of episodic tension-type headaches that have been well controlled by over-the-counter analgesics. Both her mother and her maternal grandmother have a history of migraine. The patient has no other medical problems or history of surgery. Her body mass index (BMI) is 23.

What is the likely cause of this patient's orthostatic headache?
What are the treatment options?
How are such headaches best prevented?

THE DIALOGUE:
Primary care doctor: Is the patient's current headache similar to the one she had when she initially presented to the ED?
Headache specialist: No. Her initial headache was probably migraine without aura, based on her strong family history and migrainous symptoms.

Many patients present to the ED when they first experience a severe headache. If the symptoms suggest migraine and there is no evidence of meningitis or subarachnoid hemorrhage, lumbar puncture is not recommended; however, the procedure is still performed frequently in this setting.

Primary care doctor: Why did a headache develop 2 days after the lumbar puncture?
Headache specialist: Lumbar puncture can cause orthostatic headaches that are related to low cerebrospinal fluid (CSF) pressure resulting from leakage of CSF from the puncture site. The headache typically begins within 2 days of the procedure, but in some cases, its onset may be delayed for as long as 2 weeks. Post-lumbar puncture headaches are usually located in the frontal, occipital, or fronto-occipital area. Occasionally, they are global. Nausea, photophobia, blurred vision, diplopia, neck stiffness, tinnitus, and dizziness may accompany the headache.

Primary care doctor: How often do orthostatic headaches occur after lumbar puncture?
Headache specialist: Headaches occur in up to one third of patients who undergo CSF examination. In one third of patients who experience headache (about 10% of the total number of patients who undergo CSF examination), the pain is severe. Post-lumbar puncture headache may be more likely to develop in young women who have a low BMI.

Primary care doctor: Is there a correlation between the CSF opening pressure and the development of a postpuncture headache?
Headache specialist: No, there generally is no correlation between the CSF opening pressure and the development of a post-lumbar puncture headache or between the composition of the CSF and the development of a postpuncture headache.

Primary care doctor: What is the treatment of choice for post-lumbar puncture headache?
Headache specialist: In most patients, the headache resolves spontaneously after several days.
The effectiveness of intravenous hydration has not been clearly established. In cases that do not respond to conservative management (which may include watchful waiting, hydration, or in some patients, intravenous caffeine infusion), an epidural blood patch may be considered.

**Primary care doctor:** How does the epidural blood patch work, and how effective is the treatment?

**Headache specialist:** The epidural blood patch compresses the dura, which leads to immediate volume replacement. There is also a latent effect related to sealing of the dural defect.\(^1\) A single patch relieves pain in about 90% of patients. For those who do not respond to the first patch, a second patch almost always brings relief.\(^3\)

**Primary care doctor:** Are there any other causes of low–CSF pressure headaches?

**Headache specialist:** Other causes include traumatic CSF leaks that result from injury or surgery. Spontaneous leaks may be caused by meningeal diverticula or an area of weakness in the dura. Connective tissue disorders, such as Marfan syndrome, may also cause CSF leaks.\(^4\) However, the origin of most CSF leaks, aside from lumbar puncture, is unknown.

**Primary care doctor:** In patients in whom lumbar puncture is indicated, what steps can be taken to help prevent a low–CSF pressure headache from developing?

**Headache specialist:** The American Academy of Neurology has published guidelines on the prevention of postlumbar puncture headaches. The 2 measures for which the evidence of effectiveness at preventing such headaches is strongest are the use of smaller needles (20- to 27-gauge needles are best, since needles smaller than this may not be practical if a large amount of CSF needs to be collected) and insertion of the needle with its bevel parallel to the vertical axis of the spine. (More dural fibers are severed when the bevel is perpendicular to the fibers than when it is parallel.) The collection of higher volumes of CSF is not a risk factor for postlumbar puncture headache, nor is there evidence that the duration of recumbency after a lumbar puncture affects risk. For more information, the complete guidelines are available at [http://www.neurology.org/cgi/reprint/55/7/909.pdf](http://www.neurology.org/cgi/reprint/55/7/909.pdf).

**Outcome of this case**
The patient's headache resolved after several days of watchful waiting. No further interventions were required.

**References:** REFERENCES:


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