Post-Partum Headache

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Headache in the clinical setting is very common, whether or not post-partum. There are many causes of headache that are unrelated to the recent administration of anesthesia (post dural puncture headache). Part of being a peri-operative consultant includes dealing with common post-operative complaints. The evaluation of headache requires a history, physical examination, lab tests (if indicated) and possible consultation. This article will briefly review postdural puncture headache, which was discussed in detail in the Apr-Jun 2005 issue of the CSA Bulletin in an article by Stephanie Goodman, M.D., and then focus on the other causes of headache in the post-partum period.

The differential diagnosis of headache is extensive, including nonspecific headache, migraine, preeclampsia, incipient eclampsia, and PDPH (See Table 1). Headache occurs in about 40 percent of women in the first week after delivery.¹ Risk factors for nonspecific headache include history of migraine, depression, stress and caffeine abstinence.

### Table 1. Differential Diagnosis of Post-Partum Headache

<table>
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<th>Differential Diagnosis</th>
<th>Common Cause</th>
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<td>Nonspecific headache, stress</td>
<td>Drugs (e.g., MgSO₄)</td>
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<td>Migraine</td>
<td>Hypoglycemia</td>
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<td>Post-dural Puncture Headache</td>
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<td>HTN/preeclampsia/incipient eclampsia</td>
<td>Subdural hematoma</td>
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<td>Caffeine withdrawal</td>
<td>Subarachnoid hemorrhage</td>
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<td>Lactation headache</td>
<td>Cortical vein thrombosis</td>
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<td>Allergies/Sinusitis</td>
<td>Brain tumor</td>
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Post Dural Puncture Headache: Anytime the dura, or thecal sac, is penetrated, a headache may ensue. PDPH occurs more commonly in a younger, especially pregnant, female. Thus, parturients are at greatest risk for a
headache: 50 percent to 80 percent after puncture with a 17 gauge epidural needle, 5 percent to 8 percent after using a 25 gauge cutting spinal needle and 1 percent for the blunt/pencil-point 25 gauge spinal needles. The headache is caused by low CSF fluid, resulting in a distinctly positional headache. There are few symptoms when supine, with a dramatic increase in symptoms when sitting or standing. The CSF acts as a cushion, and when the CSF volume is low, the cranial contents sag when in the upright position. This causes pain which originates from the tentorium, bridging veins, or cranial nerves. A variant of PDPH may exhibit predominantly as positional pain in the back of the neck. If the symptoms are not positional, it is not PDPH.

Tension Headache: These typically last 30 minutes to seven days and have at least two of the following: pressing/tightening (non-pulsating) character, mild or moderate intensity, bilateral location and not aggravated by physical exertion. Nausea and photophobia are notably absent. Treatment is with simple analgesics.

Migraine Headache: This occurs in 15 percent to 20 percent of women. Typically migraines first occur prior to pregnancy, are related to hormonal fluctuations, and improve with pregnancy in 66 percent of women. However, headaches frequently return postpartum. Migraine headaches typically last four to 72 hours and have two of the following: unilateral location, pulsating, moderate to severe intensity, and aggravated by physical activity. Nausea, vomiting, or photophobia are also present. Prodromes may occur in 15 percent of patients with visual changes being the most common. Treatment includes ergotamine tartrate, higher dose aspirin, NSAID, or a 5-HT1-receptor agonist (e.g., sumatriptan).

Hypertension/Preeclampsia/Eclampsia: Severe hypertension may produce headaches. Preeclampsia causes headache, possible visual changes, nausea and vomiting. Postpartum preeclampsia or eclampsia may first manifest as a complaint of headache.

Brain Tumor: Headache associated with brain tumor is usually intermittent, dull, aching in quality, and relieved by simple analgesics. Symptoms may overlap with migraine or tension headache. In clinics specializing in headache, the incidence of brain tumor is less than 1 percent.

Cortical Vein Thrombosis: This occurs in 1:6,000 parturients, probably due to the presence of a hypercoagulable state. In the United Kingdom, CVT occurred in 1:3,000 deliveries with a 25 percent mortality rate (1988-90 Report on Confidential Enquiries). The superior longitudinal sinus or the cortical veins may thrombose, impeding venous drainage. The increased venous pressure reduces CSF absorption from the arachnoid villi and increases
intracranial pressure. In severe cases, venous stasis produces arterial stasis and, thus, focal cerebral infarction. The onset of symptoms may occur before or after delivery and include severe headache, nausea, focal neurologic signs, seizures, and altered mental status. Diagnosis is made by CT scan, MRI, or cerebral angiogram. Treatment is geared towards seizure prophylaxis, reducing ICP and cerebral edema by mechanical ventilation or steroids. Anticoagulation may be used, but may increase the risk of intracerebral hemorrhage. [Editor's Note: Neurointerventional thrombolysis is of potential benefit.]

Subdural Hematomas. Any size dural puncture can rarely result in a subdural hematoma. Any form of anticoagulation increases the risk. CSF leaks through the dural puncture, decreasing ICP and thus dilating the cerebral vessels. In the upright position, downward movement of the brain may disrupt a cerebral vessel, causing a subdural hematoma. The headache will be non-positional and constant, possibly with nausea, vomiting, confusion or altered mental status. Focal neurologic signs may be present. A non-contrast CT or MRI will show the hematoma. Surgical drainage often is required.

Subarachnoid Hemorrhage: Symptoms of subarachnoid hemorrhage include severe headache, nausea, vomiting, neck stiffness, and decreased mental status. Focal neurologic deficits may occur. A non-contrast CT or MRI is indicated. Surgery may be required. Nimodipine, a selective cerebrovascular calcium channel blocker may help prevent cerebral vasospasm. Intracerebral hemorrhage has also been reported in the postpartum period with a complaint of headache that progressed to hemiparesis.

Meningitis Septic/Aseptic: Meningitis, whether septic or aseptic, is rare after regional anesthesia. Bacterial meningitis as a consequence of endocarditis occurred in 1:8000 deliveries. Symptoms may include severe headache, fever, stiff neck, Kernig and Brudzinski signs, decreased mental status, vomiting and seizures. Aseptic meningitis appears like bacterial meningitis, but with no organisms found in the CSF. Chemical irritation may be the cause. Symptoms occur six to 24 hours after spinal anesthesia and are similar to bacterial meningitis.

Pneumocephalus: Air may enter the subarachnoid space during spinal or epidural administration. Intracranial air may cause sudden severe headache. In one series of 3,700 epidurals, the use of loss of resistance to air resulted in significantly more headaches compared to saline (32 vs. 5). This occurred despite an equal number of inadvertent dural punctures. Air was seen in the ventricles and cisterns in the air group only. Air will reabsorb over hours to days. Breathing 100 percent oxygen will accelerate reabsorption due to denitrogenation of the air bubble.
Caffeine Withdrawal: Caffeine consumption is higher than ever. Patients with a moderate dose of caffeine (2.5 cups = 234 mg caffeine) can develop caffeine withdrawal headache. Even lower consumption of caffeine may lead to withdrawal symptoms such as headache in 52 percent, or even depression/anxiety in 10 percent.17

Lactation Headache: The hormonal changes of lactation may produce headaches.18

Iatrogenic/Medications: Medications may also cause headaches. MgSO₄ commonly produces flushing, nausea and headaches. Allergies to food or flowers may cause headaches. Hypoglycemia may cause headache and tachycardia. Electrolyte disturbances may also be etiologically related to headache.
11 Lumpkin MM. Reports of epidural or spinal hematoma with the concurrent use of low molecular weight heparin and spinal/epidural anesthesia or spinal puncture. FDA Public Health Advisory 12. U.S. Department of Health and Human Resources.


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