Inadvertent Dural Puncture in a Parturient with a Symptomatic, Unruptured Cerebral Aneurysm

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Introduction: Subarachnoid and intracerebral hemorrhages have been described after dural puncture (1) (2). It is thought that patients with intracranial aneurysms are at increased risk of rupture after dural puncture (2). We describe an inadvertent dural puncture in a parturient with a symptomatic, unruptured cerebral aneurysm.

Case Description: A 24-year-old Spanish-speaking female, para 3-0-0-3, presented describing reproducible “black vision” and generalized weakness over the past 5 years with near maximal neck flexion. A history of intermittent occipital headaches with photophobia was also present. A CT angiogram showed a left internal carotid artery 5 mm aneurysm projecting superiorly from the paraclinoid region.

A plan was made for elective repeat cesarean section under epidural anesthesia at 39 weeks gestation and endovascular embolization or microsurgical clipping 2 to 3 months after delivery. On the day of surgery a 17 gauge Tuohy needle inadvertently punctured the dura and an epidural catheter was threaded. 12 mg of 0.75% hyperbaric bupivicaine was incrementally bloused. Cesarean delivery of a healthy male infant followed. Immediately post procedure, the patient exhibited no headache or neurological deficits and the catheter was pulled. A plan was made for epidural blood patch if post dural puncture headache (PDPH) developed.

Ten hours post dural puncture the patient complained of a vague headache, right upper extremity numbness and pain, and right-sided facial numbness. Neurological consult recommended IV fluids and analgesia. MRI/MRA the following morning showed a stable unruptured aneurysm. The patient was discharged a few days later with no known negative sequelae.

Discussion: Regional anesthesia was chosen to minimize the effect of blood pressure in a patient with an unsecured aneurysm. However, an inadvertent dural puncture can result in a leak of cerebral spinal fluid into the epidural space Resulting in intracranial hypotension causing descent of the brain and stretch of the cranial nerves (3). Cerebral aneurysm rupture may be potentiated by large changes in transmural pressure (systemic hypertension and intracerebral hypotension) or by a shift of intracranial compartments mechanically putting pressure on the aneurysm wall. Thus, it appears the same mechanism that causes PDPH may increase risk of aneurysm rupture. To this extent, a PDPH in a parturient with a cerebral aneurysm may be an indication for an early epidural blood patch.

References: