The risk of stroke is increased in the peripartum period because of the hypercoagulable state that accompanies pregnancy [1]. The reported incidence of pregnancy-related stroke varies from 19.2 to 46.2 per 100,000 pregnancies [2,3], with cerebral venous thrombosis (CVT) accounting for a reported 22%. CVT is also more common in parturient women, with 73% of CVT cases occurring postpartum [4]. It is also strongly associated with cesarean delivery. CVT results from thrombus in one of the outflow tracts of the brain and causes venous hypertension. The clinical manifestations include headache (the most common, occurring in 70% to 90%), nausea, changes in mental status, seizures, and focal neurologic deficits [5].

Diagnosis of CVT may be very challenging, because the symptoms are common and nonspecific. Acute subarachnoid hemorrhage (SAH) has been reported as an initial sign of CVT [6], which further complicates the diagnosis, since other causes of SAH must also be considered. We report a case of postcesarean section CVT with SAH.

A previously healthy 38-year-old woman, gravida 3, para 1, abortion 1, was admitted at 38 weeks’ gestation with ruptured membranes and uterine contractions. She had a previous elective cesarean section. She was a non-smoker and denied a history of hypertension. She had regular prenatal care at our obstetric clinic, with no evidence of any complications. A cesarean section was performed under spinal anesthesia, with 12 mg of 0.5% heavy bupivacaine administered uneventfully using a 27-gauge spinal needle and with only one attempt. A live 3,250 g baby girl was delivered without difficulty and the placenta removed completely. Total blood loss was about 300 mL.

In the recovery room, the patient complained of severe headache with neck stiffness approximately 20 minutes after surgery had completed. An electrocardiogram showed bradycardia with heart rate of 42 beats/minute. A brain computed tomography scan showed SAH with blood accumulation within the cerebral cortical sulci (Figure). The ventricular system showed negative findings. Thus, cerebral angiography was immediately performed to find the source of SAH. Cerebral angiographic study for SAH was performed using a right femoral arterial approach, with catheterization of the bilateral internal and external carotid arteries. No evidence of aneurysm or vascular malformation was noted. A prominent transcerebral vein with absence of cortical vein was noted at the right parietal lobe. The study suggested the possibility of CVT. Heparin was not given...
because of increased the risk of bleeding, given her postoperative status. The patient was treated with mannitol to reduce brain edema and improve cerebral circulation, with resolution of the headache over the next two days. She was discharged 5 days later without any neurologic deficits.

This case highlights the diagnostic challenge of CVT initially presented with SAH. The prognosis of pregnancy-related CVT is reportedly good, with 80% of 67 women in one series having a favorable outcome [7]. The challenge is in making a correct diagnosis of the cause of postpartum headache.

CVT usually occurs either late in pregnancy or in the puerperium, but cases have been reported as early as 8 weeks’ gestation [8]. It is mainly attributed to hypercoagulability due to increased levels of several essential coagulation factors during pregnancy, with marked increases in fibrinogen and factor VIII in early pregnancy and elevated factors VII, IX, X, and XII throughout pregnancy [9]. Although the mechanism is not yet clearly understood, it probably relates to hormonal changes, a hypothesis further supported by the evidence that women on the oral contraceptive pill and hormone replacement therapy also have an increased risk of venous thromboembolism [10].

In terms of particular risk factors for pregnancy-related CVT, Cantu and Barinagarrementeria found that patients with CVT were more likely to be younger and have anemia and a high erythrocyte sedimentation rate [7]. Lanska et al found pregnancy-related hypertension, cesarean section, and infections to be independent risk factors for CVT, increasing the risk threefold [11]. A postoperative decline in the level of protein C, a naturally occurring coagulation inhibitor, may explain why cesarean section increases the risk of CVT [12].

CVT is only one cause of postpartum headaches. An estimated 40% of women experience headaches in the first week after delivery [13]. Patients who have had regional anesthesia may simply have a spinal headache, but they are also at risk for meningitis and pneumoencephalus. Spinal headache is the most common complication after spinal anesthesia in obstetrics, an anesthetic technique frequently used for cesarean delivery because of its technical ease, reliability, speed of onset, and safety. However, the incidence of spinal headache has dramatically decreased owing to advances in spinal needle design. In addition, the postural nature of the headache, relieved when the patient lies supine, is the key to diagnosing this entity [14]. Mild postpartum headaches may result from stress, tension, or hypoglycemia. More severe headaches may result from severe hypertension, cerebral hemorrhage, or cerebral tumor. Our patient’s headache, developing shortly after surgery, was not relieved in the supine position, nor would a spinal anesthesia-related infection have developed that quickly. She remained normotensive, thus eliminating hypertension as a cause. There were no focal neurologic signs, but the severity and acuteness of the headache mandated urgent evaluation. When the brain computed tomography scan demonstrated acute SAH over the parietal lobe, cerebral angiography was indicated to rule out the presence of a ruptured aneurysm or arteriovenous malformation.

Management of obstetric CVT includes supportive care, seizure control, measures to lower intracranial pressure, and a search for any possible infection. To prevent further thrombosis, anticoagulation is the preferred treatment, with local thrombolysis used for more extensive disease or clinical worsening [15]. As noted above, we were concerned about the risk of postcesarean bleeding, so we did not anticoagulate our patient. She recovered completely with supportive care.

In summary, postpartum headaches are very common, with etiologies ranging from totally benign to potentially lethal conditions. The challenge is deciding which patients require immediate evaluation. Physicians caring for women in the peripartum period should be familiar with the entire differential diagnosis and have a high index of suspicion for considering entities such as CVT, with or without SAH.

References