Clinical Report of the Occurrence of an Intracerebral Hemorrhage Following Post-lumbar Puncture Headache

AUGUST M. MANTIA, M.D.*

The most common complication following spinal anesthesia is post-lumbar puncture headache. This headache results from the leak of cerebrospinal fluid following lumbar puncture, which may lead to the excessive loss of CSF, thereby allowing caudal displacement of the intracranial contents. This displacement then stretches pain-sensitive structures (dura, blood vessels, and dural sinuses) and leads to the perception of pain. In addition to producing this headache, the puncture hole has been linked to both acute and chronic subdural hematomas. Recently, Pavlin et al. presented two cases in which large subdural hematomas occurred within a week of lumbar puncture. The following case report describes the occurrence of intracerebral hematoma after a lumbar puncture with a 26-gauge needle.

REPORT OF A CASE

A 27-year-old woman was admitted in early labor (G4P3A0). The entire pregnancy had been uncomplicated while she cared for three children at home. Her past medical history included allergies to penicillin, oxytocin, and granitins. On admission, her physical examination revealed a healthy female with a normal 41-week intrauterine pregnancy. The only abnormal physical sign consisted of a grade 1/6 systolic ejection murmur accompanied by a blood pressure of 110/70 torr. Routine laboratory results were within normal limits.

After a 5.5-hour labor, which was unassisted by oxytocin, spinal anesthesia was achieved with lidocaine (40 mg). A 26-gauge needle with an introducer was used for the block and needle insertion was attempted three times. The block was at the L4-5 interspace, and there were no paresthesias. Subsequently, a 7-pound, 8-ounce male infant was delivered with one and five minute Apgar scores of 9 and 9. The estimated blood loss was 350 ml. There were no complications during the delivery. A tubal ligation was performed under general anesthesia later that day. Anesthesia consisted of thiopental, succinylcholine, fentanyl, and nitrous oxide. There were no problems throughout the case.

Initially, the postoperative course was routine. On the second post-delivery day, however, the patient began complaining of neck pain and postural headache exacerbated by voiding. Later that day, the patient complained of severe postural headache which she described as beginning in the neck and radiating to the forehead and eyes. The patient also volunteered a history of mild postural headache for two days following one of two previous spinal anesthetics for vaginal delivery. Further inquiries revealed that the patient’s fluid intake had been minimal since 6 hours prior to delivery. Because her symptoms were compatible with a spinal headache, oral fluid intake was increased. In addition, crystalloids intravenously were started and a Velcro® binder was placed around the abdomen. Following this regimen, the patient began to improve, and by the third postdelivery day her headache was decreasing in intensity. She was able to sit, talk, and move comfortably.

Suddenly, on the fifth postdelivery day the patient began exhibiting personality changes and was unable to move her left extremities. A left facial palsy soon developed with deviation of both eyes to the right. Arterial blood pressure ranged between 110/70 and 140/90 torr, and the patient was hyperactive on the left side. A neurosurgeon confirmed these signs and further detected an expressive aphasia. The final diagnosis was a left hemiplegia with some minimal movement of the left fingers on command. A CAT scan showed an intracranial hemorrhage involving the right parietal lobe with minimal mass effect on the right lateral ventricle. An arteriogram of the left common carotid followed, which confirmed the presence of an avascular mass in the right parietal region.

Following transfer to the ICU, arterial blood pressure ranged from 160–170/80–90 torr. All laboratory values, including a coagulation profile and complete blood count, were within normal limits. On the sixth postdelivery day, the patient began to improve as evidenced by her increased ability to move her left hand. The next day, she began responding to verbal commands and pronouncing single words, although, with difficulty. From this point, the patient continued to make slow improvement. This was accomplished in spite of postoperative complications of both pulmonary and urinary tract infections, which were treated successfully with antibiotics. Return of motor functions to her left extremities was assisted by the departments of occupational and rehabilitational therapy. A repeat CAT scan on the tenth post-delivery day again documented an intracerebral hemorrhage of the right temporal parietal region. A follow-up CAT scan three weeks later confirmed a resolving right temporal parietal hematoma. Since that time, she has continued to improve in both her motor and speech areas.

DISCUSSION

Although a definite cause-and-effect relationship (between spinal puncture and intracerebral hemorrhage) has not been established, our report prompts the question...
as to whether this distressing complication might occur with some greater frequency following spinal anesthesia. Certainly, subdural hematomas have occurred following lumbar puncture in association with cerebral aneurysms, brain tumors, recent cerebrovascular accidents, and meningovascular syphilis. 6-8 Thorsen 9 has documented the presence of multiple petechial hemorrhages within the brain after spinal anesthesia. Despite this evidence, however, a search of the literature reveals no study which establishes a relationship between lumbar puncture and intracerebral hemorrhage.

In a recent review, Hibbard 10 states that of 67 deaths in gravidae suffering from preeclampsia in Los Angeles County between 1956 and 1972, 34 had cerebral bleeding and/or edema. Upon review of this patient’s record, the elevated blood pressure (up to 170/90 torr) taken on the day of the complication may have represented either a sign of latent preeclampsia or pregnancy associated hypertension. However, a study of this patient’s hospitalization record indicated neither proteinuria nor edema. Preeclampsia, therefore, can be definitely ruled out. Pregnancy-associated hypertension may have existed, however, and could have contributed to this severe complication.

Prevention of this complication would be quite difficult due to the latent character of the disease. Although this patient did have a mild postural headache after a previous spinal anesthetic, the headache alone probably does not warrant a CAT scan to rule out intracranial pathology. However, if a strong family history or previous symptomatology had resulted in detection of a defect, either elective cesarean section, abortion, or even sterilization might have been acceptable alternatives. Nevertheless, when this complication does occur, aggressive treatment (neurosurgical intervention) depends on the site of the hematoma. Unfortunately, in our patient the location of the hematoma under the right motor strip precluded neurosurgical evacuation.

In summary, the potential hazards of performing spinal anesthesia in patients with known or suspected intracranial tumors and vascular abnormalities are well-known. What is not generally recognized is that cases of persistent non-postural headache after spinal anesthesia may indicate the presence of a serious intracranial lesion. We therefore recommend that patients with post-lumbar puncture headache and with additional symptoms not consistent with a diagnosis of postural headache be seen in consultation by a neurosurgeon, thus attempting to identify or rule out possible intracranial problems which may be amenable to treatment.

REFERENCES

Tension Pneumothorax During Pediatric Bronchoscopy

MICHAEL J. GALLAGHER, M.D.,* AND BETTY J. MULLER, M.D.+