Case Report

Acute Cranial Subdural Hematoma Emerging Third Day After Spinal Anesthesia: A Case Report

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Summary

Acute subdural hematomas are pathologies which can occur following severe head trauma and they significantly affect mortality and morbidity. They usually occur as a result of post-traumatic parenchymal contusion or rupture of bridging veins. However, acute subdural hematoma following spinal anesthesia is a rare complication. In this case report we represent a patient who underwent cesarean section (C/S) under spinal anesthesia and then taken to emergency department by her relatives with severe headache and loss of consciousness at postoperative 3rd day. She underwent surgical drainage of acute subdural hematoma in the right frontoparietal region which was revealed out with cranial computerized tomography (CT).

Key words: Acute Subdural Hematoma, Spinal Anesthesia, Cesarean

INTRODUCTION

Acute subdural hematoma is a neurosurgical emergency situation with high mortality and morbidity². Subdural hemorrhage usually occurs due to rupture of veins between the cortex and the dural venous sinuses and more rarely because of...
rupture of direct dural sinuses or the superficial cortical arteries\(^5\). Subdural hematomas are seen as crescent-shaped between the dura and brain parenchyma and they are seen hyperdense at CT\(^2\). Acute subdural hematoma consists the first 1 to 3 days of post-traumatic period\(^3\). Clinical status of acute subdural hematoma cases is very poor and half of the cases are presented to the emergency department as unconscious\(^3\). Acute subdural hematoma after spinal anesthesia is rare\(^4\). In this case report we presented an acute subdural hematoma which is a rare complication of spinal anesthesia.

**CASE PRESENTATION**

A 28-year-old female patient underwent C/S under spinal anesthesia three days ago and was brought to the emergency department of our hospital by her relatives for complaints of severe headache and subsequent loss of consciousness. In the patient's neurologic examination; she was unconscious, Glasgow coma score (GCS) was E: 2, M: 4, V: 2, pupillary was anisocoric. The patient's and family history was unremarkable. 100 cc mannitol was given intravenously. The patient had no history of trauma but cranial CT scan revealed acute subdural hematoma which is approximately 2 cm at the thickest side at the right frontoparietal region (Figure-1). The patient had no history of hypertension nor history of drug use. It was learned that she had no problem during pregnancy. At the biochemical examination, hemoglobin was 12.4 g / dl, Htc: 35.8%, WBC: 13,000/μL, Plt: 240,000/μL, aPTT: 21.6 " , PTZ: 11.5", INR: 0.92, and routine biochemical analysis was within normal limits. The patient underwent an emergency surgical drainage of subdural hematoma. Postoperative GCS was 15 and the neurological examination of the patient was normal. Brain MRI and MR angiography showed no vascular pathology and the patient was discharged with cure at postoperative 2\(^{nd}\) day after control cranial CT (Figure-2). The patient gave birth after the second pregnancy under general anesthesia with C/S 6 years later and the control brain MRI was normal (Figure-3).

*Figure 1: Acute subdural hematoma in the right frontoparietal region which is approximately 2 cm in the thickest place is seen at the patient's preoperative cranial CT.*
Figure 2: Control Cranial CT of the patient taken postoperative second day.

Figure 3: The patient's control brain MRI 2 years after the second pregnancy who delivered with C / S under general anesthesia.
DISCUSSION

Acute subdural hematoma can be seen at 8-57% of patients who admitted to the emergency room with head trauma\(^1\). Subdural hematomas usually outcome following the injury of bridge veins between the superior sagittal sinus, the medial side of the cerebral hemisphere, falk cerebri, and parieto-occipital cortex\(^{11}\). Severe neurological losses occur in most of the patients\(^5\). They usually require surgical intervention. Even if neurologic deficit does not develop, acute subdural hematomas, reaching a thickness of 5 mm must be drained surgically\(^5\).

Cranial traumas play a large role in the etiology of acute subdural hematomas\(^{4,11}\). The source is usually venous not the arterial vascular structures\(^4\). Besides trauma, it may also occur due to vascular malformation, coagulation disorders, hypertensive bleeding and aneurysm rupture\(^3,4\). Cranial subdural hematoma after spinal anesthesia is rarely seen and the incidence is not known exactly\(^{11}\).

A lot of complications can be seen related with spinal anesthesia. Headache is the most common complication\(^5\). Cerebrospinal Fluid (CSF) pressure decreases due to leakage of CSF over the dura and arachnoid tears during spinal anesthesia and the leak rate reaches over CSF production rate after a period of time. The brain changes downwards due to the loss of CSF and pain sensitive structures including important neural structures, the dura and bridge veins become stretched and headache occurs due to strain\(^6\). Withdrawal of the bridge veins with compensatory vasodilatation of the vascular structures depending on the reduced CSF pressure because of the leakage rarely cause rupture of veins and thus a subdural hematoma\(^6\). Headaches that occur due to dural irritation often shows an increasing trend while standing and decreasing while lying and shows relief in about 2 days with fluid intake and bed rest\(^7,10\). In cranial subdural hematoma after spinal anesthesia, in addition to headache; confusion, nausea and vomiting may occur\(^4,10\). If the resulting headache is caused by spinal anesthesia, it usually increases with sitting or standing and decreases or completely heals according to the lying position. If headache persists more than two days, subdural hematoma or intracranial hemorrhage should be suspected\(^{10,12}\). Because headache clinic may occur due to spinal anesthesia at subdural hematoma, the diagnosis of subdural hematoma might not be in mind. However, changes of the severity of headache depending on the position can give an idea about the diagnosis. Macon et al. reported that headache occurring after spinal anesthesia decreases in the supine position, but headache of subdural hematoma will be sustained and severe even in the supine position\(^7\). In our case, the headache developed after spinal anesthesia, although it was masked with the analgesic treatment it was not fully relieved but even more exacerbated. Diagnosis was confirmed with Cranial CT taken from the patient who was brought to the emergency department unconscious on the third day.

Incidence of subdural hematoma is increased in patients with cerebral atrophy, the presence of ventricular shunt, anticoagulant therapy, oral contraceptive use and thrombocytopenia\(^{10}\). Saha et al. reported a case of subdural hematoma having thrombocytopenia, which develops as a result of spinal anesthesia and requiring surgical decompression\(^9\). Rocio and colleagues reported that, cranial CT showed in acute subdural hematoma developed in the right temporoparietal region, which was evacuated with surgical drainage in a 31 years old patient who was taken to the emergency department 2 days after the C/S with complaints of unconsciousness and weakness on the right side extremity, and they determined no
underlying predisposing factors such as vascular malformations or bleeding diathesis\(^8\). Also, in our case which spinal anesthesia was made for C/S, any predisposing factor could not be determined.

In the treatment of headache due to spinal anesthesia; applying blood patch to the epidural space in the early period or oral 10mg/kg caffeine is recommended in order to prevent leakage of cerebrospinal fluid from subarachnoid space\(^6\). However, it is not able to do the recommended treatments in patients who gave birth with C/S. Therefore, close monitoring of hospitalized patients is recommended. It was reported that prevalence of headache increased with sharp-pointed and large-scale needles, and pencil point and small spinal needles formed less headache\(^2,6\). For this reason, considering this issue by experts of anesthesia at spinal needle selection will be more effective.

In prolonged headache after spinal anesthesia, neurological and radiological evaluation should be performed carefully. Medical treatment may lead to delay in the diagnosis by covering neurological findings. In cases undergoing spinal anesthesia, anesthetists, clinicians who are making the clinical follow-up and emergency service professionals should be aware that intracranial subdural hematoma may develop after spinal anesthesia. If an underlying predisposing factor is not detected, there is no objection for re-birth with C/S for these patients under general anesthesia, and close follow-up and control of patients in a multidisciplinary manner (anesthesia, obstetrics and gynecology, and neurosurgery) is recommended.

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