

A Case of Postpartum Seizures Following Spinal Anesthesia and Epidural Blood Patch

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A 29-year-old healthy female who developed seizures on post-partum period after cesarean section under spinal anesthesia and epidural blood patch is discussed and the causes of the post-partum seizures associated with post-dural punctured headache after spinal and epidural interventions are investigated.

All of the causes for post-partum seizure were excluded. There was no evidence of pre-eclampsia antepartum or postpartum. All clinical investigations were normal including electroencephalography, computerized tomography and magnetic resonance imaging angiography. All symptoms resolved completely.

The aetiology of the seizures was discussed based on cerebral artery vasospasm and the increase of the intracranial pressure maybe an aetiological factor.

Key Words: Postpartum seizure, Spinal anesthesia, Epidural blood patch

Gynecol Obstet Reprod Med; 2011;17:110-112

Introduction

There are many causes for post-partum seizures (PPS). The most common factor is eclampsia, while other factors including cerebral venous sinus thrombosis, epilepsy, cerebral vein thrombosis, thrombotic thrombocytopenic purpura, subarachnoid haemorrhage, cerebral infarction or hemorrhage, hypoglycemia, hypocalcemia, hyponatremia, drug or alcohol withdrawal, caffeine intake and idiopathic.^{1,2,3} Otherwise, there were several case reports presented PPS associated with post-dural puncture headache (PDPH).^{3,4,5,6,7} In these reports, PPS occurred subsequent to PDPH after epidural analgesia or epidural blood patch treatment (EBP).

We present such a case of PPS that occurred subsequent to PDPH after spinal anesthesia for cesarean section and shortly after EBP. Also we compared present case to several similar cases that have been recently reported.

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Submitted for Publication: 11. 11. 2010

Accepted for Publication: 24. 03. 2011

Case Report

A 29-year-old multigravid healthy female of 38+ week's gestation planned an elective cesarean section due to prior cesarean section history was admitted to hospital. Her past medical and antenatal history was unremarkable. She had no history of seizures or neurologic and psychiatric disorders. On admission, there were no abnormality of her medical examination, She was normotensive and plasma albumin concentration (3.8 g/dL-1, normal range 3.5±5.5 g/dL-1); platelet count, liver function tests and coagulation profile were within normal limits and no proteinuria. Also there were no signs suggestive of pre-eclampsia and she was normotensive (117/78 mmHg). In the operating room, after prehydration (750 mL ringer-lactate) spinal anesthesia of single shot was administered with 12.5 mg hyperbaric bupivacaine using 25 gauge pencil-point needle at L3-L4 interspace. After the spinal block of 10 minutes, neuro-sensorial level was measured as T5 and kept on at the end of the surgery. Hypotension due to spinal block was moderate and quickly restored by 5 mg of ephedrine then remained normal. Twenty minutes after spinal block, a healthy boy was born, with Apgar scores of 9/9/9. After delivery an oxytocin of 40 IU i.v. infusion was started. Surgical bleeding was <500 mL. Motor block due to the spinal anesthesia was resolved completely 140 minutes after surgery and patient was mobilised. Blood pressure maintained as normotensive postoperatively. Postoperative laboratory tests as liver function tests, the level of serum albumine, platelet count, protein in urine and coagulation profile were within normal limits. The

following day the patient began to complain of sudden onset of frontal and occipital headache, characteristic of a PDPH which was worse on standing. Then, regular oral analgesics (paracetamol without caffeine, tramadol), bed-rest and oral hydration were prescribed. The following hours, because of the symptoms did better, she was discharged. On day three of post-operative, she was readmitted to the hospital due to the sudden worsening of her headache with acute blindness. She had become very agitated and irritable. Her arterial pressure was normal and had no proteinuria. She then proceeded to have a tonic-clonic generalised seizure, which was treated effectively with diazepam on post-operative third day. Patient was consulted by a neurologist after the seizures did not show any evidence for intracranial pathology or increased intracranial pressure. There was also no evidence of a focus responsible for acute cerebral dysfunction on the results from electroencephalography (EEG), a computed tomography (CT) and magnetic resonance imaging (MRI). Then, because the severe headache persisted, an EBP was provided on the third day after operation using 10 ml of autologous blood, which was injected into the L3-L4 epidural space. Shortly after injection, a tonic-clonic generalised seizure was observed and treated effectively with diazepam of 10 mg i.v. The second MRI showed no abnormality. Then the MRI angiography was applied and showed no evidence of arterial vasospasm. However, a relief of headache was formed completely after EBP. Patient was discharged with any complaint about PDPH and neurologic disorders on the fourth day of post-operative. On review in the anesthetic clinic a month later she was in excellent condition and did not report any further headache and seizures.

Discussion

Interestingly this report presented that firstly a PPS after cesarean section under spinal anesthesia induced by PDPH and secondly a seizure occurred shortly after EBP.

All of the causes for PPS were excluded in our patient by a good history, examination, blood and urine testing, CT, MR angiography and EEG, which were all reported as normal. She had no any features of preeclampsia and eclampsia during clinical and laboratory examination and there was no a history of caffeine intake in our case.

Seizures following dural puncture have previously been reported in the literature.^{3,4,5,6,7} All of these reports observed that the PPS induced by PDPH occurred after epidural procedures (epidural analgesia for the labour). Incidence of PDPH after epidural procedures (with 16 Gauge needle) may rise up to 70%,⁸ whereas between 0-25 % after spinal anesthesia with 25 gauge needle.^{9,10,11} Undoubtedly PDPH is related with the needle thickness, also we should consider that the seizure may be connected with the amount and/or the rate of leakage.

Shearer et al.⁷ suppose that the seizures were caused by cerebrospinal fluid hypotension and cerebral shift, provoking cerebral vasospasm. This cerebral vasospasm may be the cause of the headache, visual symptoms, cranial nerve palsies and seizures. Rice et al.⁴ reported a case who was suffered with seizure associated with PDPH, but preeclampsia and eclampsia cannot be excluded in this case. In another similar case report an objective reason was not put forward then indicated that anesthetists, obstetricians and neurologists should make an assessment together.⁵ The other report presented an interesting result that PPS occurred after 30 min and 50 min of EBP performing.⁶ In contrast with our report there was an interval period here. In this report because of the MRI angiography or transcranial doppler were not performed, cerebral artery vasospasm cannot not determined. In our report, seizure occurred shortly after epidural injection. But MRI angiography did not show an evidence of vasospasm. It's possible that the vasospasm may disappeared up to the time of MRI angiography.

Ho CM. et al.¹² reported a case developed posterior reversible encephalopathy syndrome after spinal anesthesia, complicated by PDPH. Her MR angiography showed diffuse vasospasm of the main arteries of bilateral cerebral hemispheres. In this report, the patient did not show a seizure, but some neurologic symptoms related to the syndrome developed. Cerebral artery vasospasm, possibly due to the traction of this vessel by anatomic brain displacement related to the cerebrospinal fluid leakage could provide an explanation for the development of seizure.¹² Alike we can put forward that the blocking of the cerebrospinal fluid leakage suddenly by EBP causes the cerebral artery vasospasm and then seizure.

Although pregnancy itself is known to increase the risk of cerebral infarction, suggesting increased vasospasm.¹³ Williams et al found no change in middle cerebral artery blood flow measured using transcranial Doppler in normotensive women around delivery, but they showed a significant increase in middle cerebral artery blood flow in post-partum preeclamptic women,¹⁴ Therefore the preeclampsia and eclampsia should be excluded absolutely for PPS. In our case there was no evidence of preeclampsia and eclampsia at all.

Although some authors showed that the seizures are prevented due to the PDPH was discontinued by EBP,^{4,15} the most of investigators presented a lot of cases who were occurred seizures after performing EBP.^{5,6,16,17,18} Several reports related to the neurologic changes after epidural patch, had been declared and presented a hydrocephalus leads to the increasing of intracranial pressure and acute neurologic deterioration after EBP.^{17,18} Also, the mass effect of the clotted blood may increase the intracranial pressure.¹⁹ In our report, the reason of the seizure may be an increasing of intracranial pressure following the EBP. The increasing of intracranial pressure was probably short term, because of any neurologic symptom ex-

cept the seizure was not observed and MRI showed no evidence of increasing in intracranial pressure.

In conclusion, we observed that the PPS induced by PDPH may happen after cesarean section under spinal anesthesia. Also we detected that the seizure consisted just after EBP without interval time, in contrast with other similar reports. Although CT and MRI showed no evidence of the increasing of intracranial pressure and cerebral arterial vasospasm, we supposed that the shortlived cerebral arterial vasospasm and the increasing of intracranial pressure had been developed. So, PDPH should be managed more attentively and it should be kept in mind that EBP may cause some serious cerebral complications.

Spinal Anestezi ve Epidural Kan Yaması Uygulamasını Takiben Gözlenen Doğum Sonrası Konvülsiyon Olgusu

Spinal anestezi altında sezeryanla doğum sonrası ve epidural kan yaması uygulaması sonrası konvülsiyon geçiren 29 yaşındaki olgu üzerinde spinal ve epidural girişimler sonrası dura delinmesiyle birlikte görülen doğum sonrası konvülsiyonların nedenleri tartışıldı.

Preeklamsi de dahil olmak üzere tüm doğum sonrası konvülsiyon nedenleri dışlandı. Hastanın elektro ensefalografi, bilgisayarlı beyin tomografisi ve manyetik rezonanslı beyin anjiyografisi normaldi. Hastanın tüm semptomları postoperatif 3. günde tamamen kayboldu.

Bu olguda konvülsiyon nedeni olarak serebral arter spazmı ve kafa içi basınç artışı tartışıldı.

Anahtar Kelimeler: Doğum sonrası konvülsiyon, Spinal anestezi, Epidural kan yaması

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