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Bilateral chronic subdural hematoma in postpartum period: Case report and review of literature

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ABSTRACT

Introduction: Postpartum chronic subdural hematoma (PCSDH) of non-traumatic origin is a rare but potentially life-threatening complication in the obstetric population which usually presents with severe headache.

Case Report: We describe timely diagnosis and surgical management of a 27-year-old female patient with bilateral chronic subdural hematoma of non-traumatic origin in the post-postpartum period for which surgical management was employed following irresponsive conservative management.

Conclusion: The suspicion of chronic subdural hematoma should be considered in any patient complaining of severe persistent headache following spinal anesthesia in the postpartum period and requires prompt neuroimaging for timely identification. Surgical management following irresponsive conservative management in selected patients can be achieved with satisfactory outcomes.

Keywords: Chronic subdural hematoma, Post-dural puncture headache, Spinal anesthesia, Surgical management

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INTRODUCTION

Postpartum chronic subdural hematoma (PCSDH) of non-traumatic origin is a rare but potentially life-threatening complication in the obstetric population which usually presents with severe headaches [1, 2]. Although PCSDH is uncommon, in general, the wide continuum of several neurologic conditions in the obstetric population which present with headaches range from normal postpartum headache, tension headache, and caffeine withdrawal, to serious conditions such as preeclampsia, posterior reversible encephalopathy, cortical vein thrombosis [3], undiagnosed Chiari malformation, and meningitis often resemble PCSDH and make initial diagnosis a clinical challenge [4].

In this case study, we describe a case of bilateral PCSDH in a patient with no prior history of trauma nor prepartum hypertension who presented with severe headaches. The patient was initially diagnosed and treated clinically for common post-dural puncture headache (PDPH) which is the most common usual suspect for patients who have undergone spinal anesthesia. Informed consent was obtained from the patient for the publication of this case report.

CASE REPORT

A 27-year-old female para 2 and living two presented with a compliant of severe headache which started two weeks ago when she started experiencing gradual onset of headache following caesarean delivery under spinal anesthesia. The indication for caesarean delivery was elective due to one previous scar and patient's wish. The headache was of gradual onset, worsening with time, at first relieved by analgesia, but for the past five days it was not responding to analgesics, she denied history of convulsions, no history of fever, blurred vision, loss of consciousness, no history of fainting attacks dizziness or weakness on any side of the body, however, reported history of one episode of non-projectile vomiting containing food contents. She also denied history of trauma such as accidents or assault to the head. She was diagnosed empirically with PDPH on the basis of the location, chronology, and characteristics of the headache and was treated conservatively with bed rest, intravenous hydration, and oral analgesics. Obstetric history was unremarkable of first pregnancy in 2019, which was term pregnancy, delivered by caesarean delivery; however, there was no history of such postpartum headaches. Drug history and family history was non-contributory.

After worsening of the persistent headache despite oral analgesics, the patient presented to the emergency department where computed tomography (CT) scan of the head was done which showed bilateral subacute chronic subdural hematoma (Figure 1). Subsequently, neurosurgery consultation was sought and the patient was counseled about management options and initially treated conservatively, discharged with oral analgesics and tranexamic acid. During this time, the patient remained afebrile, vital signs and blood tests were normal, and no other focal neurological symptoms or signs were observed; however, four days later the patient was admitted due to the persistence and further worsening of headaches despite the initial treatment administered. After discussions with the multidisciplinary team, the patient was planned for and underwent emergency bilateral burr hole craniotomy under local anesthesia where two burr holes were placed on the right frontal and occipital-parietal point whereas a single burr hole was placed in the left parietal occipital point and subsequent washout was done to remove subacute red–brown hematoma. The patient fared well in the post-operative period with significant subsiding of the headache and was later discharged uneventfully day 3 post-op with Glasgow Coma Scale (GCS) 15/15 and no focal neurological deficit. Follow neurological studies were performed at 48 hours post-operation which showed that the hematoma significantly with no new changes in size or characteristics. The patient was discharged with complete resolution of headache on day 5 of admission. At the 1-month and 4-month follow-up visit she was asymptomatic and the CT scan showed complete resolution of the hematoma (Figure 2).

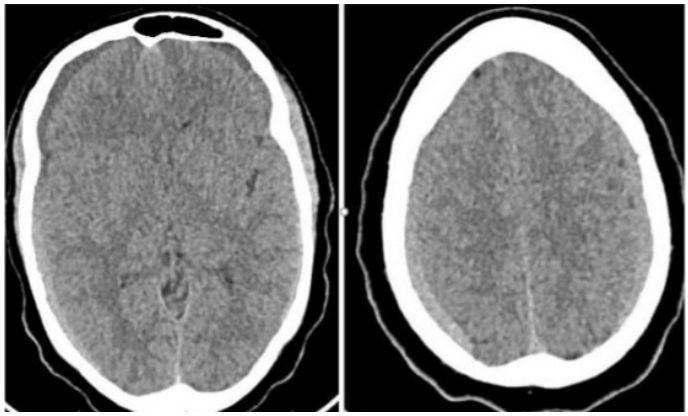

Figure 1: Non-contrast CT scan of the brain showing an isodense, extra-axial collection is seen overlying bilateral frontal-parietal lobes (right 0.7 cm thick, left 0.5 cm thick) midline central. Effacement of adjacent cortical sulci as well as anterior horn of the right lateral ventricle.

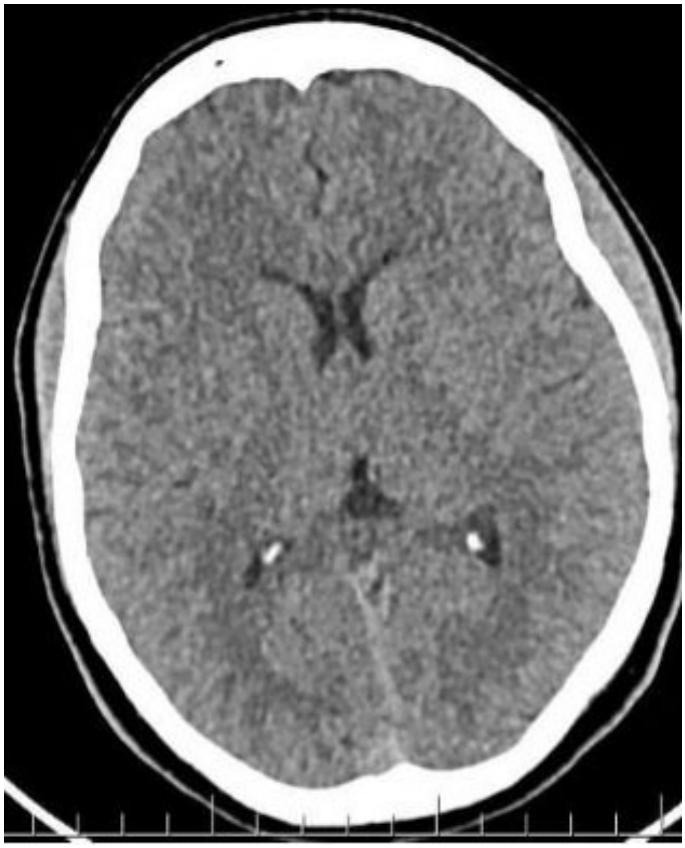

Figure 2: Post-op 1 month non-contrast CT scan image showing complete resolution of the hematoma.

DISCUSSION

Postpartum chronic subdural hematoma is a rare neurologic condition which primarily presents with chronic headache in the postpartum period among the obstetric population and timely diagnosis and intervention is paramount to avoid adverse effects such as fatal outcome [5]. The diagnosis is often masked and delayed because it shares similar clinical characteristics with post-

dural puncture headache, with headache being the most common symptom [6, 7]. Additionally, several authors in the field of anesthesia and obstetrics have long recognized PDPH as the most common complication [6–11] in patients undergoing neuraxial procedure and given that our patient underwent a caesarean section under post-dural puncture anesthesia, it is not uncommon that our patient was empirically diagnosed and treated for PDPH.

Pathophysiology

Although the mechanism of non-traumatic PCSDH still remains to be well elucidated in literature, several authors have postulated several theories in the light of this matter.

Pontes et al. [4] described a mechanism linking PDPH and intracranial subdural hematoma in which they proposed that leakage of cerebrospinal fluid (CSF) from the dural orifice lessens the intraspinal and intracranial pressure with the resultant alterations causing caudal displacement of the brain and stretching of pain-sensitive structures and emissary veins given that the thinnest parts of the emissary vein walls are found in the subdural space and the thickest in the subarachnoid portion. In tandem to our case, the routine CSF leakage following post-dural puncture which could explain the resultant gravitational pull on the subdural veins with potential tearing and hemorrhage into the subdural space which was later visualized as CSDH on conventional CT scans.

Another possible mechanism revolved around the normal physiological changes in pregnancy where Gao and colleagues [12] noted that the increase in several clotting factors, decreased inhibition of clotting mechanisms, and inhibition of fibrinolysis in the pregnant population, there is an increased risk of thromboembolism, which persists six weeks into the postpartum period. They further elaborated that the total blood volume increases by 40% at term, leading to an increased risk of hypertension, and rising progesterone levels in the third trimester contribute to increased venous compliance, capillary leakage, and vasogenic edema.

A diagnostic challenge inherent to acute neurologic conditions during pregnancy and the postpartum period is that the presenting symptoms of several distinct pathologic conditions often overlap, and the conditions themselves are not mutually exclusive [12].

Ilkhchoui et al. [13] summarized the signs and symptoms associated with postpartum headache that prompt neuroimaging which included: altered mental status, focal neurological deficit, any change in pattern and characteristics of the headache; nausea, vomiting, seizure, visual change; pre-existing conditions such as preeclampsia/eclampsia, thrombophilia, immunosuppression, cancer, vasculitis; abrupt onset of headache. Sachs and Smiley [7] emphasized the importance of neuroimaging especially in those patients with PDPH for more than one week presenting with any of the signs or symptoms mentioned above to rule out a possible intracranial subdural hematoma.

Management

Surgical intervention for treatment of chronic subdural hematoma such as burr hole drainage, craniotomy for hematoma evacuation [2, 14, 15] and decompressive craniotomy [1] has been described by several authors with satisfactory outcomes [1].

Surgical evacuation is usually indicated if the thickness of the hematoma exceeds 10 mm, if the midline is greater than 5 mm, or if there is neurological deterioration [7]. Early epidural blood patch (EBP) could be a prophylactic intervention for intracranial subdural hematoma (SH) by reducing the risk of subdural bleeding.

In our case, following irresponsive conservative management and the size of the hematoma, a surgical approach was followed with good clinical outcome where the patient underwent bilateral burr hole craniotomy under local anesthesia.

Early epidural blood patch has been mentioned by some authors as an optional minimal invasive intervention for treatment of PDPH with a good success rate of as high as 90% although this method was not considered in management of our patient [9, 16].

However, non-surgical management of intracranial subdural hematoma as a complication of spinal anesthesia has similarly been reported with good outcome in literature [4, 9, 14, 17, 18].

In a rare presentation with simultaneous appearance of cerebral venous thrombosis and bilateral subdural hematomas, Zupan and colleagues reported effective use of low molecular weight heparin and antiaggregating therapy in a 26-year-old female patient following epidural analgesia for labor and delivery who similarly initially presented with headache, emphasizing the importance of urgent imaging and highlighting the role of medical management [19].

In summary, this case serves to highlight the possible diagnosis of chronic subdural hematoma in the presence of persistent postpartum headache after spinal anesthesia for caesarean section and the importance of multidisciplinary approach in management.

CONCLUSION

The suspicion of chronic subdural hematoma should be considered in any patient complaining of severe persistent headache following spinal anesthesia in the postpartum period and requires prompt neuroimaging for timely identification. Surgical management following irresponsive conservative management in selected patients can be achieved with satisfactory outcomes.

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Author Contributions

Fridolin Mujuni – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Mathias Callist Njau – Conception of the work, Design of the work, Acquisition of data, Interpretation of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Benard Kenemo – Conception of the work, Acquisition of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

James Lubuulwa – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission

The corresponding author is the guarantor of submission.

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Consent Statement

Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.