

SUB-DURAL HEMATOMA FOLLOWING SPINAL ANESTHESIA TREATED WITH EPIDURAL BLOOD PATCH AND BURR-HOLE EVACUATION

- A Case Report -

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Abstract

The appearance of a subdural hematoma (SDH) following spinal anesthesia is a serious and rare complication which mandates prompt diagnosis, although the treatment modalities are not well codified. Patients with post-dural puncture headache (PDPH) non-responsive to conservative measures and/or those patients with a change of the character of the headache should be considered seriously. In symptomatic patients, evacuation of SDH is essential but epidural blood patch should be strongly considered as it can prevent reappearance of SDH by sealing the dural defect.

Keywords: Spinal anesthesia; Post dural puncture headache; subdural hematoma; epidural blood patch

Competing Interests: NIL

Introduction

The post-dural puncture headache (PDPH) is a known complication of spinal anesthesia, characterized by headache, commonly triggered by assuming upright posture¹. The appearance of a subdural hematoma (SDH) is a serious and rare complication of spinal or epidural anesthesia with an accidental dural puncture which mandates prompt diagnosis, although the treatment modalities are not well codified².

We report a case of bilateral SDH presented with severe PDPH following spinal anesthesia, treated with simultaneous evacuation of the SDH and a lumbar epidural blood patch.

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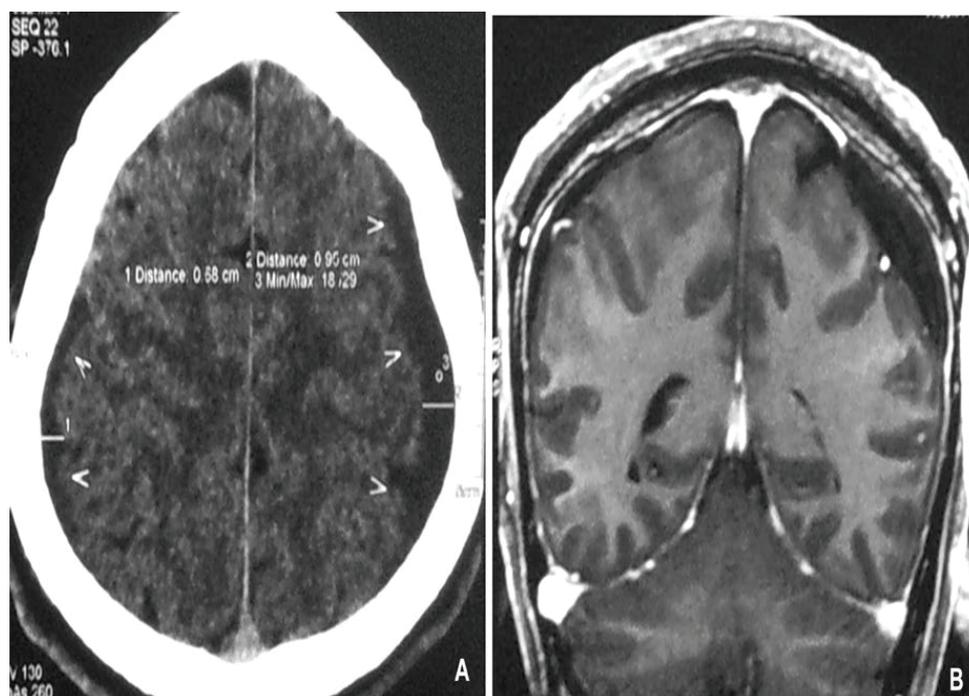
Case report

A 49 year old gentleman presented with severe headache for three months and visual disturbances since one week. He underwent inguinal hernia surgery under spinal anesthesia three months ago, when subarachnoid block was performed successfully with 25G Quincke type spinal needle through L4-L5 interspace, but with multiple attempts. The surgery was uneventful. Following the surgery he complained of mild headache not associated with any neurological signs, which became severe on the second post-operative day. He was treated with conservative measures: bed rest, postural adaptations, intravenous fluids and analgesics. The severity of headache decreased from the fourth post-operative day, and he was discharged on the seventh post-operative day. However the headache reappeared after 3 days, and over the next 3 months its intensity increased gradually. The nature of headache was holocranial, intermittent, not associated with vomiting, increased while standing and partially relieved on lying down. The patient also complained of visual disturbances since one week before presentation. The patient was not having any other co-morbid illnesses and was not receiving any anticoagulant medication. Computed

Tomography (CT) scan on admission showed bilateral SDH over fronto-parietal region (6.8 mm on the right and 9 mm on the left). A Magnetic Resonance Imaging (MRI) taken simultaneously confirmed late sub-acute SDH. In addition it showed generalized patchy enhancements and dropping of the posterior fossa structures (Fig. 1). Considering the extent and symptomatology of SDH, a decision was made to drain the more affected side (left). Since the clinical history suggested a high possibility of an iatrogenic SDH following spinal anesthesia, an epidural blood patch was also considered to seal the dural vent which was possibly causing the persistent CSF leak, at the same time with the burr-hole evacuation of the SDH. Pre-op laboratory investigations were within normal limits.

Patient was shifted to the operation theatre and general anesthesia was administered with standard monitoring. After endotracheal intubation, an arterial catheter was inserted in the right radial artery for continuous blood pressure monitoring and also for an easy aspiration of blood for epidural blood patch administration. SDH on the left side was drained with burr-hole evacuation. Thereafter patient was placed in left lateral position, and a 16G Tuohy type epidural needle was placed through L3-L4 interspace and

Fig. 1
Axial tomography scan (A) and coronal T1 weighted gadolinium enhanced magnetic resonance image (B) of the patient showing presence of bilateral frontoparietal chronic subdural hematomas (left > right)



carefully positioned in the epidural space. Twenty milliliters of blood was drawn from the arterial line and injected into the epidural space through the needle. The needle was carefully withdrawn and the puncture site was sealed. Patient was again turned supine, anesthetics were discontinued, and he was reversed and extubated. Following extubation the patient was conscious, alert and did not complain of headache. He reported complete relief of the residual pain from second post operative day. A CT scan performed on post-op day 5 did not show any SDH in the operated side and insignificant volume of SDH on the opposite side.

Discussion

PDPH remains a major complication of spinal anesthesia. In majority of patients this subsides within a few days with conservative measures. SDH is rare, but it can be a lethal complication following spinal or epidural anesthesia. Because of the relative rarity of this complication, it is difficult to precisely identify contributing factors. Previous studies focused on Cerebrospinal Fluid (CSF) leakage³. Most of the reported patients were symptomatic at diagnosis and having focal neurological signs. In those cases, the treatment was surgery; however, an epidural blood patch has a definite role in patients with PDPH without any neurological signs, when presented early. Epidural blood patch decreases the risk of SDH by preventing the reduction of CSF volume and subsequent intracranial hypotension. A recent literature has shown that 80% of patients with SDH following spinal anesthesia required surgery and the mortality rate was 20%³. Another series has reported the incidence of SDH as 3.5% with a mortality of 67% in patients following CSF drainage through the lumbar route⁴.

The postulated mechanisms of PDPH and SDH

are similar. They involve continuous leakage of CSF through the dural vent causing a reduction in CSF volume, lowering intraspinal CSF pressure and subsequently leading to intracranial hypotension. This results in caudal movement of the brain and the spinal cord, which in turn stretches the pain sensitive structures, dura, cranial nerves and the bridging veins. Following a spinal anesthesia, a dural fistula may remain patent for weeks, and the volume of CSF loss could well exceed the normal rate of production⁵. Excessive leakage of CSF leads to collapse of the ventricles, which tends to detach the brain from the dura, ultimately causing rupture of the bridging veins resulting in SDH.

In our patient, the delay in diagnosis was mainly because of the insidious onset of symptoms. The precise time of formation of SDH cannot be concluded. Once SDH develops, the intracranial pressure is increased, which can be associated with non-postural headache, disorientation and more serious neurologic symptoms. A change in headache characteristics from postural to non-postural should always be considered as a warning sign. It is evident that intracranial hypotension syndrome might be a prodrome of future development of SDH following a dural puncture.

Conclusion

Patients with PDPH non-responsive to standard conservative measures and/or those with a change of the character of the headache should be considered seriously. Systematic brain imaging might aid in detecting SDH early, considering that in majority of such patients, SDH remains unnoticed. In symptomatic patients, evacuation of SDH is essential but epidural blood patch should be strongly considered as it can prevent reappearance of SDH by sealing the dural defect.

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