INTRACEREBRAL HAEMORRHAGE AFTER LUMBAR DURAL PUNCTURE IN A PATIENT WITH BRAIN METASTASIS

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Abstract

A known case of testicular tumour underwent bilateral orchiectomy under spinal anaesthesia. He developed headache and altered sensorium postoperatively. CT scan head showed secondaries in the brain with intra-cerebral bleed. Typically the patient had no neurological symptoms in the past. The presented postoperative complication is of interest because the secondaries in brain, which must have been present for months, became symptomatic acutely in the post-operative period.

Keywords

Anaesthesia technique – Spinal Anaesthesia, Complications–Headache, Intracerebral haemorrhage

A pre-existing symptomless brain metastasis/tumour can exacerbate in immediate postoperative period. Spinal anaesthesia may be a precipitating event in the evolution of central nervous system afflictions. Besides, the anaesthesiologist and the anaesthetic technique might be implicated for the post-operative complication. Usually the possibility of spinal anaesthetic complications dominates

the thinking of consultants and other likely causes of the disease are relegated to a secondary note. Lack of early recognition and preoccupation with a relation to spinal anaesthesia delays diagnosis and therapy. We report an acute postoperative neurological complication after spinal anaesthesia in a patient with brain metastasis.

Case report

A 50 year old male was admitted in the surgical ward with complaints of gradually increasing painful scrotal swelling of left side. On examination patients' general condition was fair, his pulse rate was 80 min^{-1}, blood pressure was 120/80 mm Hg and chest was clear. Ultrasonography showed malignant mass involving left testis with normal liver, kidney, spleen and pancreas. His haematological and biochemical investigations were within normal limits but his chest x-ray showed canon ball opacities in bilateral midzone. A diagnosis of left testicular tumour with lung metastasis was made and patient was scheduled for bilateral orchiectomy. His preanaesthetic evaluation was unremarkable.

Patient was kept fasting for eight hours prior to surgery and premedicated with tab. alprazolam 0.25 mg orally two hours before surgery. In operation theatre, after instituting monitoring of heart rate, non-invasive blood pressure, ECG and peripheral arterial oxygen saturation, intravenous cannulation was done. After single atraumatic introduction of 25 G spinal needle in L3-4 sub-arachnoid space, free flow of cerebrospinal fluid (CSF) was achieved and 0.5% hyperbaric bupivacaine 2.5 ml (12.5 mg) was administered. A sensory block level of T8 was obtained and intraoperative period was uneventful. On second postoperative day, patient developed mild continuous postural headache. Considering post dural puncture headache (PDPH) as a possible cause, the patient was administered intravenous fluids, inj. paracetamol 300mg i/m eight hourly and inj. dexamethasone 4mg i/v six hourly. The headache persisted and became non-postural in nature. On fourth postoperative day, patient had blurring of vision and altered sensorium (GCS- $E_2M_4V_4$). The consulting neurologist raised a possibility of secondaries in brain. A CT scan head was done and it showed a hyper dense enhancement and surrounding oedema in the right parieto- temporal lobe. A diagnosis of brain metastasis with intra-cerebral bleed was made and patient was shifted to ICU and administered injection mannitol 100ml i/v eight hourly, inj. dexamethasone 4mg i/v six hourly, inj. frusemide 40 mg i/v BD and inj. phenytoin 100mg i/v eight hourly. His GCS deteriorated further to $E_1V_1M_3$. Trachea was intubated and mechanical ventilation instituted.

Inspite of all efforts, patient died on seventh postoperative day. Patient's relatives refused autopsy.

Discussion

The occurrence of concomitant intracranial pathology in a patient with PDPH is rare. Patient with PDPH have classic postural headache. The occurrence of additional signs and symptoms should alert the clinician to the presence of intracranial pathology.[1] Chronic subdural haematoma is a known complication after spinal anaesthesia due to leakage of CSF resulting in loss of support of intracranial structures; especially thin walled cortico-meningeal veins within the skull.[2,3] Jack described postpartum intracranial subdural haematoma as a possible complication of epidural analgesia. The proposed causes of intracranial dural haematoma are coughing, straining, exertion, valsalva manoeuvre and presence of coagulopathies.[3] However; intracerebral bleeding after dural puncture is rare. Bleeker et al reported a patient with intracerebral haemorrhage following an accidental dural puncture during an attempted epidural for pain relief in labour.[4] Zader et al reported an intraspinal tumour, present for years, becoming acutely symptomatic after lumbar epidural analgesia following colon surgery.[5] Benzon reported occurrence of non-postural and non-continuous headache in a patient who developed intracerebral haemorrhage after dural puncture and blood patch.[6] However, in our patient the headache was continuous in nature.

Bleeding from aneurysm or weak areas in cerebral vessels can occur secondary to episodes of hypertension[4] but our patient was haemodynamically stable throughout the perioperative period. Mercieri et al reported a case of cerebral ischaemia after epidural analgesia for labor, complicated by dural puncture and treated with two epidural blood patches.[7] They suggested that cerebral vasospasm could be caused by the lumbar puncture per se. Cerebral vasoconstriction, possibly due to anatomical brain displacement, could provide an explanation for the development of both headache and seizures after dural puncture.[8] Subdural and extradural haematoma are powerful stimuli for cerebral vasoconstriction. The blood of epidural blood patch (EBP) can spread through the duramater, causing cerebral vasoconstriction. Dural puncture and or EBP have been speculated to cause cerebral angiopathy where sustained cerebral vasospasm can lead on to development of cerebral ischaemia.[7] However, in our patient neither epidural blood patch was done nor there was a bloody puncture leading to possible epidural haematoma.

In patients with suspected intracranial pathology with PDPH, an abbreviated neurological examination should be performed. A CT scan/ MRI is not advisable in every such patient who develops PDPH but

should be considered in such patients in whom an intracranial pathology is suspected and those with strong family history or previous symptomatology.[1,9] In our patient continuous headache and altered sensorium alerted the anaesthetist to the possibility of any other cause not related to spinal anaesthesia. Subsequent neurologist consultation and CT scan head was done which showed brain metastasis and intracerebral bleeding.

A definite cause and effect relationship between dural puncture and intracerebral haemorrhage has not been established but this grave complication might occur with increasing frequency following dural puncture. When this complication does occur, an aggressive treatment should be done in consultation with a neurologist and neurosurgical intervention done (if feasible) depending upon the site of haematoma.[9] This report emphasis that an appropriate index of suspicion should be there in patients who present with testicular tumours with distant metastasis (lungs). Neurological symptoms do occur after dural puncture but one should keep a broad differential diagnosis, and not all headaches are PDPH.

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