

Blindness in Postpartum Period: Spinal Analgesia or Pre-Eclampsia Caused It?

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Introduction

Spinal anaesthesia is associated with certain complications such as severe hypotension, post-spinal headache, meningitis, audio-visual disturbances and some time transient or permanent neurological damage. Now-a-days spinal anaesthesia is in demand again due to cost effectiveness, rapidity and predictability of effects¹ and decreased rate of complications². A case of a young woman who received spinal analgesia for labor and within twenty-four hours, developed a throbbing headache is reported here.

On the fourth post-spinal day she complained of visual disturbances which rapidly led to complete blindness. The problem of an appropriate diagnosis of the cause could lead to medicolegal issues.

Case Report

A healthy primigravida (P0+0, G-1) 26 years of age who is a nurse by profession was admitted to the maternity unit at Aga Khan University Hospital for elective induction of labor. At the time of admission she had a history of amenorrhea for 40+ weeks. She was a registered case at the antenatal clinic where she made thirteen visits before her final admission for elective induction of labor. The antenatal course was uneventful except one admission due to lower abdominal pain. On the day of admission for induction of labor she was well orientated in time and space. The physical and laboratory examinations were within normal limits. She was not in active labor. The vaginal examination revealed cervical dilatation of 1.5 cm, cephalic presentation and intact membranes. Tablet prostin (PG £2) was inserted and two hours later artificial rupture of membranes (ARM) was done. A continuous infusion of syntocinon (10 I.U. in 500 ml 5% D/W) was started. Analgesia was provided with injections of pethidine/promethazine 75 mg/25 mg intramuscularly. With the progress of labor the pain became unbearable. She was very restless, uncooperative and unmanageable. Vaginal examination showed a cervical dilatation of 6+ cm. Regional analgesia was offered and was accepted by the patient. Spinal route was chosen because a rapid, reliable and effective pain relief was needed and it was also estimated that she will deliver within next two to two and a half hours. The patient was informed about the procedure and a verbal consent was obtained. She was preloaded with 750 ml of ringer lactate fluid. Using the standard precautions of aseptic technique and proper preparation of the skin, intrathecal space was entered at the level of L3-L4 with 22 gauge spinal needle and entry was confirmed with the free flow of clear CSF. Isobaric Marcaine 0.5% 2.5 ml (12.5 mg) was injected intrathecally with the patient in sitting position. Soon a block upto T8-T9 was established and the patient had instant pain relief. Her vital signs did not change significantly. A healthy baby with apgar score of 9/10 was delivered spontaneously through vaginal route under spinal analgesia. Within twenty four hours of spinal analgesia the patient complained of headache, that was throbbing in nature and was located in the temporo-frontal region but poorly related to the posture. The physical examination showed no signs of meningeal irritation. A provisional diagnosis of post-spinal headache was made and conservative treatment with NSAID, hydration and bed rest was started. The conservative management did not give

any significant relief to her complaint Cafergot (Caffeine plus ergotamine) orally was added to the regime over the next twenty-four hours and even injection pethidine was given on PRN bases to manage her problem. On the third post-partum day the patient continued to have headache and the possibility of an epidural blood patch was discussed. The vital signs' chart showed a consistently elevated blood pressure (140-150/100-110 mmHg) over the last twenty-four hours. By this time the patient was a bit confused and neurotic. A consultation from a psychiatrist was requested, On the morning of the fourth post-partum thy she still had severe headache and also developed blurring of vision. Within the next few hours the patient complained of complete blindness. At that time her physical examination showed a blood pressure of 180/90 mmHg, mild neck rigidity, while ophthalmoscopic examination showed no signs of raised intracranial pressure.

A consultation from a neurologist was asked and a CT scan of the brain was advised. The CT scan showed diffuse cerebral edema, meningeal enhancement with no mid line shift. All hematological tests were within normal limits except raised LDH level (LDH 778 u/ml). The CSF sample was obtained for detailed examination and culture/sensitivity. It was blood stained and the examination revealed RBCs, high protein level and lymphocytes 95% (Glucose 60 mg/dl, chloride 124 mmol/l, protein 269 mg/dl, TLC 88/mi lymphocytes 95%). RBCs 8912/nil, CSF Culture: Few colonies of staphylococcus species. A provisional diagnosis of meningitis (viral or bacterial) or pm- eclampsia/eclampsia was made and treatment started with antibiotics, anti-hypertensive drugs and mannitol. The patient was transferred to ICU for further management The MRI study on the next thy, showed evidence of high signal, minimal subdural fluid collection over both cerebral hemispheres and left cerebellar hemisphere. There were also areas of abnormal signal intensity in both occipital lobes in the deep white matter of the brain in the parietal region and in the cerebellar hemispheres. These findings are suggestive of areas of infarct which could be attributed to vasculitis, meningitis or cerebral oedema. The patient was still very restless, confused and blind. Decadron was added to the therapy. An elective intubation and mild hyperventilation was planned but was not instituted. On sixth post-partum thy the clinical condition improved and she started recognizing people. Her blood pressure returned to normal limits (125/75 mmHg). Another sample of CSF was drawn and sent for examination which showed normal protein level and almost non- significant numbers of RBCs (Glucose 61 mg/dl, Chloride 126 mmol/l, protein 33 mg/dl, TLC 4/nil, RBCs 80/nil). CSF culture examination revealed no bacterial growth. Her eye sight gradually improved over the next three days. She made an uneventful recovery and was discharged home with normal ocular acuity and normal blood pressure. Another MRI study was done three weeks later to the first study, which showed completed resolution of previous abnormal findings. There were no further complaints in her post-natal follow-up.

Discussion

Spinal anaesthesia is favoured because of rapidity of onset of action and reliability. Technically it is easy to perform and is associated with fewer complications¹. Post spinal headache is one of the known complications and in majority of the patients it develops within 24-48 hours. It involves mainly the occipital and frontal areas and gets worse with change of posture but a group of patients might have post³ spinal headache with poor correlation to posture⁴. The headache is due to slow leak of CSF which leads to contraction of subarachnoid space and compensatory expansion of the pain sensitive intracranial veins⁵. It can be associated with auditory and vestibular symptoms⁶. The incidence of headache has decreased since the use of special .pnd fine needles⁷ such as Quincke needles or Sprotte needles and even in Obstetrics it is only 1.6% with 22 or 24 gauge Sprotte needles⁸. In majority of the cases it resolves completely within 5 days (1-12 days) with conservative treatment but a few may need autologous epidural blood patch⁶. In younger age group of patients postspinal headache could be due

to other reasons² and when headache persists despite conservative treatment, the patient should be carefully evaluated for any other associated pathology⁹. In this patient typical post-spinal headache started within twenty-four hours after delivery and was poorly related to posture. Her symptoms were not relieved with conservative treatment and invasive management with epidural blood patch was withheld with the view that it would settle down within few days. Associated symptoms such as auditory and vestibular are seen with moderate to severe headache⁶. Ocular symptoms such as double vision, blurring, inability to read and abducens palsy have also been documented¹⁰ but blindness has never been reported which occurred in this patient. The sudden changes in the intracranial pressure due to CSF leak, compensatory dilatation and traction of intracranial vessels could result in tearing of these vessels and haemorrhage. Haemorrhage in the cortical area can lead to blindness. When blindness is of cortical origin, it is characterized by intact pupillary light reflex and normal ophthalmoscopic findings¹¹ and these findings were present in this patient. In cortical blindness, altered state of consciousness is seen and is due to the lesions in the deeper white matter or basal ganglia¹². This patient did have altered mental status and lesions in the deeper white matter. The persistently elevated blood pressure since the postpartum period, findings of CT scan of brain, CSF examination and MRI study results, changed the diagnosis and she was treated as a case of meningitis or severe pre-eclampsia. During pregnancy induced hypertension the cerebral blood velocity and resistance to flow is increased due to vascular changes. Velocity and resistance increases even more in immediate puerperal period. A transient alteration in the blood brain barrier and increased intracellular fluid secondary to transient cerebral ischaemia is also seen in patients with preeclamptic toxemia. These changes could lead to cerebral edema and petechial haemorrhages with consequent focal neurological lesions and transient cortical blindness in Preeclamptic patients¹³. In a retrospective study Cunningham et al¹¹ have shown that majority of the patients with preeclampsia had predominant symptoms of severe headache before the onset of blindness. Similarly in this case severe headache was followed by blindness. The reported duration of blindness ranges from four hours to 192 hours (eight days?, in different patients, although it resolves completely). This patient started recognizing people after forty-eight hours of blindness and recovered fully in six to seven days. The case reported here raises interesting and important questions about diagnosis and management. Did she really have a post-spinal headache or was the headache an early sign of pre-eclampsia? She had a typical post-spinal headache within first twenty four hours, this could be due to the use of 22 gauge needle, as the incidence of headache is higher with wide bore spinal needles. It is also difficult to rule out that cerebral changes were not there before spinal anaesthesia was established. She was treated conservatively which is a normal practice, as headache in majority of these patients resolves completely with such treatment. Also the application of epidural blood patch could have complicated her clinical condition, rather than benefiting the patient as the pathology was different. The course of events, physical and laboratory findings (raised blood pressure, elevated LDH), CT Scan of brain and MRI study results and the resolution of blindness shows that the cause of the problem was probably underlying obstetrical pathology rather than spinal analgesia. Spinal analgesia might have contributed to the earlier occurrence of her symptoms. The coincidental combination of spinal analgesia in a patient with underlying obstetrical pathology can lead to misdiagnosis and medicolegal problems.

The lesson to learn from this case is that patient's complaints should always be taken seriously and investigated properly. The patient should not be treated blindly. A thorough physical examination, proper monitoring of vital signs, neurological assessment and a careful search for other pathology should be made like headache persists after spinal anaesthesia especially in obstetric patients.

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