

COMBINED SPINAL EPIDURAL ANESTHESIA FOR CESAREAN SECTION IN A PREGNANT PATIENT WITH RARE INTRACRANIAL NEOPLASM

ANJOLIE CHHABRA*, NEERAJ KUMAR*, ASHWINI KUMAR*,
NEENA SINGH** AND B.S. SHARMA***

Introduction

There are several reports of obstetric emergencies in pregnant patients with malignant intracranial tumors precipitated by worsening of the mother's neurological status which necessitate an early delivery of the fetus before definite therapy can be administered to the mother¹⁻³.

We describe a patient with a sphenoid sinus tumor who developed loss of vision due to rapid tumor progression necessitating an early delivery of her twin fetuses by cesarean section. The patient had co morbidities and requested to be awake during the surgery, she was managed using a combined spinal epidural anesthesia. The advantages of combined spinal epidural anesthesia as compared to a single shot subarachnoid block, epidural block or general anesthesia are discussed in a pregnant patient with decrease in intracranial compliance.

Key words: Combined Spinal Epidural, Cesarean section, intracranial neoplasm.

Case Report

A 30 year old multigravida (G3 P1+0+1+1) at 35 weeks of gestation with twin pregnancy (diamniotic dichorionic) and an intracranial space occupying lesion (ICSOL) was referred to the Neurosurgery Department of our tertiary care hospital from a peripheral health center with total loss of vision in the right eye which had progressed over two weeks. A month prior she had developed ptosis of the left eye, which recovered spontaneously. The patient gave history of bilateral frontal headaches, on and off, for last 4-5 years. The headaches were associated with vomiting and had been increasing in intensity for the last two months.

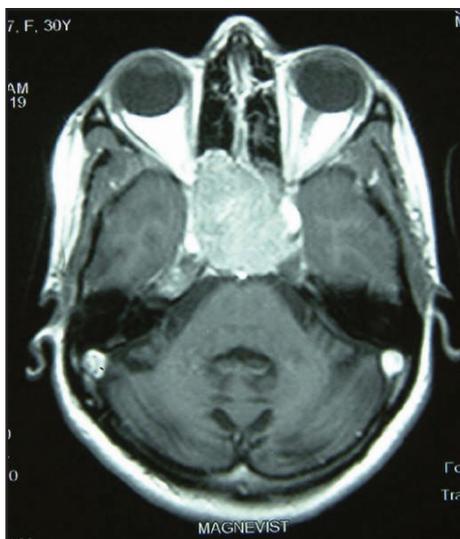
On evaluation she was found to have right second, third, sixth cranial nerve palsy, bilateral disc pallor and no papilledema.

* Departments of Anesthesiology, ** Obstetrics and Gynecology, *** Neurosurgery, All India Institute of Medical Sciences, New Delhi, India.

Corresponding author: Dr. Neeraj Kumar, Senior Resident, Department of Anaesthesiology, All India Institute of Medical Sciences, New Delhi 110029, India. E-mail: drneerajk@gmail.com

Magnetic resonance imaging (MRI) of the head showed a homogeneous, enhancing midline mass of 4.2-3.0 cm size in the sphenoid – occipital region (clivus), anteriorly obliterating the sphenoid sinus, posteriorly extending up to the pre-pontine cistern and superiorly thinning the bone of the hypophyseal fossa. Bilaterally it was extending in to the cavernous sinus encasing the intracavernous portion of internal carotid artery, more on the left. The optic tracts and chiasma appeared to be normal. The findings were suggestive of a chordoma of the clival region. The ventricular system was normal and no parenchymal hypodensity or midline shift was visible (Fig. 1).

Fig. 1



The patient was also detected to have pregnancy induced hypertension (PIH) (150/100 mmHg right upper limb, supine). Oral methyldopa, 500 mg 8 hourly was started. The serum bilirubin (1.5 mg/dL), liver enzymes (SGOT / SGPT – 92/101 IU) and alkaline phosphatase (792 IU) were raised with negative markers for viral hepatitis, suggestive of intrahepatic cholestasis of pregnancy. The prothrombin time and remaining investigations were normal. An early delivery of the fetuses was planned to enable transphenoidal debulking and biopsy of the tumor at a later stage.

On pre anesthetic evaluation the patient was fully conscious with a Glasgow coma scale of 15, anxious about her ailment and keen not to be made unconscious for the cesarean section. She was 150 cm tall, 65 kg with a pulse rate of 80 beats/minute, blood pressure

of 140/80 mm Hg. Airway examination revealed normal mouth opening, Mallampatti grade III view of the oropharynx and normal neck movements. After discussion with obstetrician and neurosurgeon it was decided to perform cesarean section under combined spinal epidural (CSE) anesthesia for which the patient was willing.

The patient was kept nil per os for solids for 8 hours and allowed sips of water till 3 hours preoperatively. On the morning of surgery metoclopramide, ranitidine and methyldopa were administered. Standard monitoring (EKG, pulse oximetry and noninvasive blood pressure) was started.

After preloading with 500 ml of Ringer lactate and administering local anesthetic, under strict asepsis a CSE block was performed at lumbar 3rd – 4th interspace in the left lateral position with a needle through needle technique using an 18 G Tuohy and 27G pencil point spinal needle (Portex^R CSE set). 1ml of 0.5% heavy bupivacaine and 25 µg of fentanyl was administered intrathecally. The epidural catheter was threaded 5 cm into the epidural space. After ten minutes, the sensory block extended from T8 to T12. 5 ml of 2% lignocaine with 1:200000 adrenaline was then slowly administered into the epidural space. 10 minutes later adequate block was established up to T4 and the obstetricians were allowed to proceed with surgery.

Seven minutes after skin incision a 2.5 kg female baby (Apgar scores of 8 and 9 at 0 and 5 minutes) and two minutes later a 1.8 kg male baby (Apgar scores of 9 and 10 at 0 and 5 minutes) were delivered.

Intraoperatively, the BP increased to 140/105 mmHg at the time of positioning for the cesarean. The blood pressure fell 30 min after the epidural drug administration to 84/50 mmHg, which responded to 6 mg bolus of mephentermine and crystalloids. Surgery lasted for 50 mins, the intraoperative period was uneventful. Sensory block receded to T10 level in 155 min, the motor block wore off in 290 minutes.

A single dose of 1.5 mg epidural morphine provided pain relief for the first 48 hours postoperatively. Thereafter the epidural catheter was removed and analgesia provided with oral ibuprofen 500 mg 8 hourly.

One week later, the blood pressure had normalized

and a transphenoidal tumor decompression and biopsy was performed under general anesthesia. Histology reported a giant cell tumor of clivus. After an uneventful recovery the patient was advised radiotherapy on an outpatient basis.

Discussion

Malignant tumors of the sphenoid are rare and have a distinctive clinical presentation. These tumors are aggressive, locally invasive and produce symptoms due to compression of vessels and nerves in the cavernous sinus or orbital fissure leading to multiple cranial neuropathies, visual loss and headaches. Though the tumors are in proximity to the pituitary gland, gland involvement and endocrinopathies are not commonly reported⁴. Our patient similarly presented with headaches, third left cranial nerve palsy which resolved spontaneously, palsy of the right 2nd, 3rd, 6th cranial due to direct tumor infiltration into the optic foramen and cavernous sinus rather than an increase in ICP. Though there were no features of raised ICP (clinically, on MRI and on fundus examination) in the presence of the large ICSOL, a decrease in intracranial compliance was assumed.

As she had a twin pregnancy the obstetricians preferred a cesarean section to a prolonged induction and labor for delivery of the fetuses. General anesthesia is usually chosen for patients with ICSOL and severe neurological obtundation¹⁻³. As this patient also had PIH, intrahepatic cholestasis of pregnancy, the possibility of a difficult intubation and a desire to remain awake during delivery of her babies, a regional anesthesia technique was chosen.

We wanted to use a regional anesthesia technique which would cause minimum alteration in the ICP, provide safe, titratable intraoperative anesthesia and postoperative analgesia as well.

Though regional anaesthetic techniques have been used, there is only one report of a subarachnoid block being used in a pregnant patient with a glioblastoma for an emergency section due to fetal distress⁵.

There are reports of epidural block for labor analgesia and cesarean section in patients with intracranial tumors^{6,7}. However, Hilt et al⁸ demonstrated that CSF pressure rises significantly even after 10 ml

of bupivacaine administration in the epidural space in patients with reduced intracranial compliance, necessitating slow administration of 5 ml volumes at a time. In one of the reports lumbar epidural was administered to minimize increase in ICP resulting from bearing down efforts, however, the patient continued to have headache and features of raised ICP with uterine contraction even after effective block was established⁶.

The advantage of a combined spinal epidural (CSE) over a single injection subarachnoid block is that a dural puncture can be easily performed with a thin pencil point 26/27 G needle which minimizes the CSF leak. In case CSF seepage persists, the low volume epidural would help in tamponading the CSF leak and enable titration of the block without producing a precipitous fall in blood pressure. In addition administration of large volumes of local anesthetic in the epidural space would be avoided and the epidural catheter would enable us to provide good postoperative analgesia.

The chance of an accidental dural puncture with the Tuohy needle is always there, however, the incidence of this happening with the CSE technique is documented to be 1.7% as compared to 4.2% with epidural anesthesia alone⁹. This may be because with CSE the epidural space can be more accurately localized with the aid of the thin pencil point spinal needle rather than by loss of resistance alone, as is used for epidural block⁹.

The use of low dose i.e. 30 µg/kg of epidural morphine did not cause any nausea, vomiting or pruritis. The epidural route was chosen and dose was reduced to minimize the above side effects. Vigilant monitoring of the patient for worsening headache, localizing neurological signs or deterioration of the level of consciousness was done to ensure no untoward sequelae. The need for absolute asepsis during the CSE was essential as an intracranial infection in this patient would have been disastrous.

In conclusion the CSE can be safely used for cesarean section in patients with intracranial space occupying lesion (ICSOL) without severe neurological deficit and in whom general anesthesia may not be preferred.

References

1. CHANG L, LOOI-LYONS L, BARTOSIK L, TINDAL S: Anesthesia for cesarean section in two patients with brain tumours. *Can J Anesth*; 1999, 46:61-5.
2. SMITH IF, SKELTON V. An unusual intracranial tumor presenting in pregnancy. *Int J Obstet Anesth*; 2007, 16:82-5.
3. BHARTI N, KASHYAP L, MOHAN VK: Anesthetic management of a parturient with cerebellopontine-angle meningioma. *Int J Obstet Anesth*; 2002, 11:219-21.
4. ESPOSITO F, KELLY DF, VINTERS HV, DeSALLES AA, SERCARZ J, GORGULHOS AA: Primary sphenoid sinus neoplasm: a report of four cases with common clinical presentation treated with transsphenoidal surgery and adjuvant therapies. *J Neurooncol*; 2006, 76:299-306.
5. ATANASSOFF PG, WEISS BM, LAUPER U: Spinal anaesthesia for Caesarean section in a patient with brain neoplasm. *Can J Anesth*; 1994, 41:163-4.
6. GOROSZENIUK T, HOWARD RS, WRIGHT JT: The management of labour using continuous lumbar epidural analgesia in a patient with a malignant cerebral tumor. *Anaesthesia*; 1986, 41:1128-29.
7. FINFER S.R: Management of labour and delivery in patients with intracranial neoplasms. *Br J Anaesth*; 1991, 67:784-7.
8. HILT H, GRAMM HJ, LINK J: Changes in intracranial pressure associated with extradural anaesthesia. *Br J Anaesth*. 1986, 58:676-80.
9. NORRIS MC, GRIECO WM, BORKOWSKI M, LEIGHTON BL, ARKOOSH VA, HUFFNAGLE HJ, HUFFNAGLE S: Complications of labor analgesia: epidural versus combined spinal epidural techniques. *Anesth Analg*; 1994, 79:529-37.