

Post-epidural Collapse: A Rare Obstetric Emergency

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ABSTRACT

Aim and objective: To understand and be efficient enough to deal with rare maternal and fetal complications of obstetric analgesia.

Background: Epidural analgesia is the most effective method for pain relief during labor. Although complications related to this procedure are rare nowadays due to the expertise achieved, but a potential life-threatening complication of unexpected high block cannot be neglected.

Case descriptions: We have encountered two normal parturients who developed sudden cardiorespiratory disturbance within few minutes of administration of epidural analgesia. On a background of worsening maternal clinical status, an emergency cesarean section was performed for severe persistent fetal bradycardia. While one patient recovered completely with no intraoperative complications, the other patient required intubation and intensive care. Postoperatively, echocardiography revealed decreased left ventricular ejection fraction with generalized left ventricular hypokinesia which improved subsequently on medical management. Working hypothesis for cardiomyopathy (Takotsubo) was considered in this case.

Conclusion: We should not underestimate the complications that can arise with epidural analgesia, and hence it should always be provided by expert anesthetists in an appropriate set up with resuscitation equipment and drugs. An awareness of such rare complications can prepare obstetricians and nursing staff along with anesthetists to tackle them.

Clinical significance: Along with the anesthetists, the obstetrics team should also be able to anticipate such rare entities and take appropriate steps for favorable maternal and fetal outcome.

Keywords: Collapse, Epidural analgesia, Takotsubo cardiomyopathy.

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BACKGROUND

Epidural analgesia is the most effective technique for pain relief during labor. Although extremely rare, a potential life-threatening complication of epidural analgesia is an unexpected high block that can lead to significant hypotension and cardiopulmonary arrest.¹

CASE DESCRIPTIONS

We present two cases with parturients experiencing this rare complication.

Case 1

A 32-year primigravida with 39.3 weeks gestation in active labor with a cervical dilatation of 3 cm was administered epidural analgesia per the institutional protocol. Within 5 minute of administration of loading dose, she complained of dizziness with palpitations. Heart rate went up to 106/minute from 80/minute, and blood pressure dropped to 90/50 mm Hg from 120/80 mm Hg. Immediate steps included giving left lateral position, oxygen with mask at the rate of 10 L/minute, and fast intravenous fluids. In view of persistent hypotension, three bolus doses of 5 mg ephedrine (diluted in 0.9% NaCl) were administered intravenously every 5 minute. The heart rate further increased to 140/minute without improvement in blood pressure. Simultaneously, there was persistent fetal bradycardia with decelerations up to 90 bpm. Emergency cesarean section was performed under general anesthesia (GA) in view of fetal distress and critical condition of the patient. A 3-kg baby was delivered with APGAR score of 6 and 8 at 1 and 5 minutes, respectively. Intraoperatively, the patient experienced a further fall of systolic blood pressure to 60 mm Hg along with ventricular premature contractions. Intravenous colloids and inotropes were given, and she was shifted to intensive care unit postoperatively.

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Two-dimensional (2D) echocardiography revealed LVEF of 35% with left ventricular hypokinesia. The patient improved gradually and was extubated after 24 hours. Repeat 2D echocardiography on fifth postoperative day showed improvement in the LVEF (45%) which further increased to 55% after a month. A working hypothesis for Takotsubo cardiomyopathy was considered in this case. The patient was discharged with her baby on the eighth postoperative day and followed up regularly with no residual complications.

Case 2

A 36-year primigravida with 38.5 weeks gestation was administered epidural analgesia per the institutional protocol. She was in active labor with a cervical dilatation of 4 cm. She presented with sudden onset of choking sensation with inability to swallow within 20 minute of administration of epidural analgesia. Her heart rate went up to 98/minute from 76/minute with sudden drop in blood pressure to 80/54 mm Hg from 130/78 mm Hg. Immediately, she

was given propped up position and oxygen by mask at 10 L/minute with intravenous colloids. Two doses of intravenous 5 mg ephedrine were administered 5 minute apart with further increase in heart rate to 132/minute along with rise in blood pressure up to 110/80 mm Hg. There was persistent fetal bradycardia of 90 bpm which further dropped to 60 bpm. Emergency cesarean section was done under general anesthesia in view of fetal distress. A 3.2-kg baby was delivered with 1 and 5 minute of APGAR score of 5 and 8, respectively. The maternal tachycardia settled immediately. Intraoperative and postoperative course was uneventful, and the mother was discharged with baby on fifth postoperative day.

DISCUSSION

Epidural analgesia was administered on maternal request in the active phase of labor by expert anesthetists in both cases. Informed written consent was taken prior to the procedure. Epidural catheter was inserted using 18G needle in L3/L4 space. 10 cc of 0.1% bupivacaine (in Case 1), 0.2% ropivacaine (in Case 2) with 2 µg/mL fentanyl were administered as loading dose followed by patient controlled epidural analgesia. Adequate epidural analgesic effect is produced by blocking the nerves of the lower thoracic and lumbar segments. Usually, 10 mL of the anesthetic medication in the epidural space is sufficient to cause effective pain relief to the patients. More than two-thirds of the administered dose absorb in the circulation and the rest diffuses into the CSF space through the dura. Patients were closely monitored with proper charting of their pulse, blood pressure, and oxygen saturation, and continuous fetal monitoring was carried out.

High block occurs as a result of inadvertent delivery of the anesthetic drug into the subarachnoid space. It may occur during the initial placement of the catheter. Hence, it is advised to administer a fraction of the loading dose [2–3 mL] and wait for 5 minute.² The loading dose can be given if the patient does not develop any symptoms. Usually, even this small amount of the drug in the subarachnoid space will lead to spinal anesthetic effects. In such cases, it is recommended either to continue with the same catheter using smaller doses of the drug and close monitoring of the patient or to repeat the procedure in epidural space above in order to avoid leakage of the drug into the previously punctured dura mater.

The other cause of high block is due to the displacement or migration of the previous normally positioned catheter from the epidural space to subarachnoid space. It is suggested to check the position of delivery system at regular intervals.

Sudden profound hypotension occurs due to the effect of anesthetic medications on the sympathetic nervous system, leading to loss of vascular tone which can lead to severe maternal and fetal complications. Severe hypotension leads to vasoconstriction of uterine vasculature, and the resultant reduction in fetoplacental blood flow causes fetal hypoxia and bradycardia as seen in both the patients.³ The involvement of the phrenic nerve due to the spread of the anesthetic drug into the cervical levels can lead to diaphragmatic paralysis causing respiratory complications.¹

Takotsubo cardiomyopathy is also known as stress-induced or transient apical ballooning syndrome which is generally associated

with stressful events. In this cardiomyopathy, there is hypokinesia of the apical parts with compensatory hyperkinesia of the basal parts, leading to the ballooning of the apex of the left ventricle.⁴ The symptomatology along with echocardiography findings raised the suspicion of focal apical cardiomyopathy and subsequent normalization of symptomatology, and cardiac function on repeat echocardiography a week later confirmed the diagnosis. As the impaired cardiac function restores within days or weeks, the patient also improves symptomatically.

The commonality in both of our cases was the sudden onset and an early recognition of the signs of complications. Immediate institution of supportive measures with continuous fetal monitoring with subsequent urgent obstetric decision for emergency delivery were done in both the cases in view of persistent fetal bradycardia. Easy accessibility and availability of operation theater with neonatal back up contributed to the successful management.

The foremost step in management of complications due to high block was to immediately stop the epidural medication. A left lateral or propped up position was given with high-low oxygen in cases of breathing difficulty. Colloids and crystalloids were infused to increase the blood pressure. Intravenous ephedrine was used to tackle profound hypotension which can be given in divided doses not exceeding a cumulative dosage of 50 mg. Continuous fetal monitoring supported and guided the decision for emergency delivery. Prompt and timely cesarean delivery resulted in a favorable neonatal outcome.

CONCLUSION

It is extremely essential that major, potentially life-threatening complications of epidural analgesia are promptly recognized, and appropriate resuscitation and management initiated. Immediate intervention resulted in a positive maternal and fetal outcome in both patients.

CLINICAL SIGNIFICANCE

Awareness and training to handle such rare complications can prepare obstetricians, nurses, and support staff to manage these effectively in partnership with anesthetists. Operation theater availability and neonatal back up is also essential for successful outcome.

REFERENCES

- Jenkins JG. Some immediate serious complications of obstetric epidural analgesia and anesthesia: a study of 145,550 epidurals. *Int J Obstet Anaes* 2005;14(1):37–42. DOI: 10.1016/j.ijoa.2004.07.009.
- Poole M. Management of high regional block in obstetrics. *Update in Anaes* 2009;25(2):55–59.
- Patel NP, El-Wahab N, Fernando R, et al. Fetal effects of combined spinal-epidural vs epidural labor analgesia: a prospective, randomised double-blind study. *Anaes* 2014;69(5):458–467. DOI: 10.1111/anae.12602.
- Nagel SN, Deutschmann M, Lopatta E, et al. Postpartum woman with pneumomediastinum and reverse (inverted) Takotsubo cardiomyopathy: a case report. *J Med Case Reports* 2014;8(1):89–93. DOI: 10.1186/1752-1947-8-89.