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(CASE REPORT)

Unilateral Horner syndrome and trigeminal palsy after lumbar epidural analgesia during labor

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Abstract

Background: Epidural analgesia is a frequently employed technique for pain management during labour and delivery; yet, it is not devoid of potential dangers.

Case report: The present case report explains a rare and unusual complication of self-limiting unilateral Horner syndrome and trigeminal palsy after Lumbar Epidural analgesia for Normal delivery. A 22-year-old healthy primigravida at 38 weeks gestation, with an unremarkable medical history and prenatal course, was admitted to the hospital in active labor. Epidural anesthesia was administered during the first stage of labor under oxytocin infusion. The procedure was uneventful, with the patient experiencing good pain relief and no motor block. However, approximately 25 minutes after epidural placement, the patient reported left eyelid heaviness, decreased sensation on the left cheek, miosis, ptosis, and redness in the left eye. Neurologic symptoms were limited to this presentation, and the patient's blood pressure dropped briefly but returned to normal with ephedrine. The patient's symptoms resolved after about 3 hours. Later, the epidural catheter was repositioned, and the patient experienced pain relief for a limited time before again developing eye symptoms. Despite stable hemodynamics, the infusion was stopped, and the patient received Entonox for pain relief. Due to a failure to progress, a cesarean delivery was performed, and the patient fully recovered from the epidural block. No further signs or symptoms of Horner's syndrome or trigeminal nerve palsy were observed postoperatively.

Conclusion: This case underscores the importance of recognizing and managing rare neurological complications, such as Horner's syndrome and trigeminal nerve palsy, in the context of epidural anesthesia during labor. While the symptoms observed were transient and resolved postpartum, healthcare providers should remain vigilant and ready to respond to such adverse events, ensuring the safety and well-being of both the mother and the newborn.

Keywords: Epidural analgesia; Trigeminal palsy; Ptosis; Horner syndrome

1. Introduction

A healthy (ASA 2) 22-year-old primigravida, was admitted to the hospital in active labor at 38 weeks gestation. Her past medical history and prenatal course, including laboratory investigations were found be unremarkable. An epidural anesthesia was requested while she was in the first stage of labor under oxytocin infusion which was used for augmentation of contraction. After obtaining informed consent of the patient in the labor room, standard monitoring was done and 500 mL Ringer's lactate infusion was administered. A lumbar epidural catheter was inserted at the interspace between L3/L4 vertebrae using a midline approach while the patient was seated. A loss of resistance to oxygen through an 18 G Touhy needle and catheter was noted 5 cm inside the interspace, and the procedure was

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uneventful. A test dose of 3 mL of 2% lidocaine was administered without evidence of complication. A bolus of 8 mL of 0.2% ropivacaine with 2 ug of fentanyl per milliliter was administered over 6 minutes, and then an infusion of the same solution was started at 6 mL per hour. The patient had good labor pain relief without any motor block. Approximately 25 minutes after epidural catheter placement, the patient complained that her left eyelid is heavy. On evaluation, the patient reported decreased sensation to light touch on the left cheek in the distribution of the maxillary branch of the trigeminal nerve and was observed to have miosis, ptosis and redness on the left side of the eye. Pinprick demonstrated the level of analgesia at the T4 segment on the left and at T5 on the right. The patient's grip strength was also found to be normal, and she denied having dyspnea or horsiness or motor weakness or sensory deficit in her upper body. There were no other cranial nerve abnormalities or neurologic deficits found.

The patient's blood pressure dropped from 115/68 mm Hg to a range of 90/30 mm Hg in the initial few minutes. After receiving 5 mg of ephedrine IV, her blood pressure returned to 110/50 mm Hg, but her neurologic symptoms persisted. Continuous foetal monitoring was conducted without any notable incidents. In view of these neurologic findings, the epidural infusion was withheld, and labor was allowed to progress. Almost 3 hours after discontinuing the infusion, the patient's symptoms of facial numbness, ptosis, and miosis resolved.

After 4 hours, the patient again requested for pain control with her epidural analgesia. Therefore, the epidural Cather was withdrawn (Repositioned) and citing at 4 cm inside the space and retested with 3 ml of xylocaine 2% and she was relieved for about 55 minutes with this dose and without any complain. After one hour, the patient starts to feel pain again and then an infusion of the same solution of 0.2% ropivacaine with 2 ug of fentanyl per milliliter was administered at 5ml per hour without a bolus. She complained again eye lid heaviness on same side with no any other hemodynamic changes after almost 2 hours, otherwise stable hemodynamics.

The level of block was almost the same as before but we decided to stop the infusion because of her eye symptoms and advised Entonox for her labor pain. Later, due to failure to progress they decided to procced with caesarian delivery. Patient was fully recovered from the epidural block and no more eye involvement was found on examination. She received general anesthesia, crush induction with propofol, succinylcholine and maintained on sevoflurane, rocuronium and fentanyl after the delivery of a healthy baby. No further signs or symptoms of Horner's syndrome or trigeminal nerve palsy were evident during the rest of this patient's postpartum period and later catheter was removed. The patient's five-day follow-up was uneventful.

2. Discussion

Horner's syndrome (HS), has been recognized as a rare, benign and unusual complication of lumbar epidural analgesia for Labor. HS is the result of the Stellar ganglion block, suggestive of high-level block between C8 and T4(1). It is characterized by a classic triad of clinical signs: ipsilateral miosis, ptosis, and anhidrosis and is also commonly associated with enophthalmos and vasodilatation(1). Paresthesia of the trigeminal nerve territory is a rare concomitant symptom associated with a high sensory block(2). The incidence of HS in the obstetric population increases considerably due to anatomical and physiological changes that occurs during the process of pregnancy. Its is around 0.5%of epidural analgesia for painless delivery and the rate increases to 4% if its converted to cesarian section(bolus)(3).

The physiopathology behind the occurrence of this syndrome mostly due to cephalic spread of the local anesthetic, leading to an interruption of the sympathetic chain from C8 to T1 before entering the superior cervical ganglion(4). In obstetric patients the physiological changes occur that favor the spread of the anesthetic to a higher level includes high abdominal pressure from the gravid uterus, injection during uterine contractions, epidural venodilation and a higher sensitivity of the sympathetic fibers to the local anesthetic due to progesterone(5).

In addition to some anatomical variations that facilitate the cephalic spread of local anesthetic, like the presence of fibrous septae in the epidural space, lumbar lordosis, scoliosis, spondylolisthesis, post-surgical adhesions, and repeated epidural punctures(6). Other theories or explanation is placement of the epidural catheter in the subdural space especially with multi-perforated catheters as some orifices are at the epidural level and others at the subdural level and especially in difficult catheterization(7).

Horner's syndrome complicating epidural anesthesia usually occurs unilaterally. The presence of HS alone should not lead to discontinuation of neuraxial blockade as it is usually a benign phenomenon(8). The median time for resolution of Horner's syndrome was two hours and in most of the cases it happened after the epidural bolus(8) Additionally, accidental migration of the catheter to the subdural space might allow local anaesthetics to spread more cephalic

dermatomes than expected. Because the subdural space extends beyond the foramen magnum and risk of subdural location of the catheter could explain trigeminal nerve involvement which will lead to trigeminal nerve palsy(9).

In our case, the unilateral manifestation of Horner's syndrome can be attributed to the patient's positioning in a seated position during the placement of the lumbar epidural catheter. Anatomical and physiological changes associated with pregnancy, combined with the specific patient positioning and the rate and volume of local anesthetic administered, likely contributed to the spread of the local anesthetic, resulting in a high sympathetic block. This occurred despite the observed sensory level being limited to T4. Notably, the patient maintained hemodynamic stability throughout labor, which can be explained by an increased sensitivity to local anesthetics due to progesterone's impact on the central and peripheral nervous systems.

3. Conclusion

Although Horner syndrome is a relatively uncommon and atypical disorder, it possesses a self-limiting nature. However, if not accurately recognised, it has the potential to result in disastrous consequences, particularly when the catheter is positioned within the subdural area.This case report emphasizes the significance of promptly suspecting, excluding subdural catheter placement, and refraining from administering bolus in the event of a conversion to caesarean delivery. Additionally, it underscores the necessity of closely monitoring the well-being of both the foetus and the mother to guarantee patient safety. Although the observed symptoms in our case were transient and resolved postpartum, healthcare providers must remain vigilant and prepared to respond to such adverse events to ensure the safety and well-being of the mother and neonate.

Compliance with ethical standards

Disclosure of conflict of interest

The authors have no conflicts of interest to declare.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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