

Epidural chlorprocaine bolus in emergency cesarean section- lessons learned from a near mishap

Basavana G Goudra, Preet Mohinder Singh¹, Maisie Jackson, Ashish C Sinha²

Department of Anesthesiology and Critical Care Medicine, Hospital of the University of Pennsylvania, Philadelphia, PA 19104, ²Department of Anesthesiology and Perioperative Medicine, Drexel University College of Medicine, Philadelphia, PA 19102, USA, ¹Department of Anesthesiology and Critical Care Medicine, All India Institute of Medical Sciences, New Delhi, India

Abstract

Administration of a large bolus of epidural chlorprocaine to hasten the spread of anesthesia is an accepted practice during emergency cesarean section. Occasionally, this practice can result in a very high block that can compromise patient's safety. We describe a case of epidural chlorprocaine administration in a 4 point position resulting in a high dermatomal block requiring respiratory assistance. Events surrounding the case are discussed, with a view to warn the reader about the pitfalls of such a practice.

Key words: 4 point position, chlorprocaine, epidural

Introduction

Anesthesiologists are occasionally called to provide anesthesia to patients presenting for a “stat” cesarean section. In the presence of a functioning labor epidural, it is not uncommon to inject a bolus of local anesthetic through the epidural catheter in the labor room or during the transfer. Electronic monitoring is uncommon during this transfer and frequently impractical. However, the whole practice needs to be reevaluated in view of our recent experience while anesthetizing such a parturient.

Case Report

A 23-year-old gravida 1 and para 1 presented in labor at about 2000 h. History included anemia (hemoglobin of 9.4 g %) and intrauterine growth retardation (4th % IOL). Her body

mass index was 26.15 kg/m² and airway examination was unremarkable. After an appropriate explanation, an epidural was inserted between the 2nd and 3rd lumbar spinous processes. Aspiration was negative to both blood and cerebrospinal fluid (CSF). A 3 cc of 1.5% lidocaine with epinephrine (1 in 200,000) was injected. Absence of tachycardia or motor blockade led us to conclude that the catheter's tip was neither in intravascular nor intrathecal space. After about 5 min, 5 cc of 0.1% of ropivacaine with fentanyl was injected as a bolus, followed by a continuous infusion as part of patient controlled epidural analgesia protocol. The protocol involved a basal infusion of ropivacaine with fentanyl at 8 cc/h along with self-administered boluses of 6 cc with a lock out time of 10 min. Further boluses of 8 cc and 10 cc of ropivacaine 1% with fentanyl was injected at 2300 h on the same day and 0100 h next day. This was additional to frequent self-administered boluses and continuous infusion at 6 cc/h.

Anesthesia for a level 2 lower-segment caesarean section (LSCS) was requested at 6.40 next morning. As the anesthesiology resident reached the labor room with necessary medications, the emergency status was changed to level 1. The time difference between the changes was about 3 min. At the hospital of the University of Pennsylvania, Philadelphia, a level 2 requires the fetus to be delivered under 30 min and a level 1 as soon as possible. The indication for LSCS was non-re-assuring fetal heart sounds with chorioamnionitis in the setting of latent labor. Prolonged fetal heart rate deceleration necessitated more urgent LSCS

Address for correspondence: Prof. Basavana G Goudra, Department of Anesthesiology and Critical Care Medicine, Hospital of the University of Pennsylvania and Perleman Scholl of Medicine, 680 Dulles, 3400 Spruce Street, Philadelphia, PA 19104, USA. E-mail: goudrab@uphs.upenn.edu

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recollected. Furthermore, in the postoperative period, the mother experienced headache. Although the distribution and postural relationship was suggestive of a postdural puncture headache and a recommendation was made for a blood patch, the mother did not like the choice. As a result, conservative treatment was initiated and partially successful. The women were subsequently discharged on the 3rd postoperative day.

Discussion

This case raises very important questions. The spread of the epidural was almost as rapid as a subarachnoid block. Accidental subarachnoid migration during the 4 point positioning is a possibility. Symptoms suggestive of a post dural puncture headache in the postoperative period allow such a suspicion. Although negative aspiration is not a reliable indicator of subarachnoid catheter position, lidocaine with epinephrine testing before every bolus administration is impractical.^[1] The possibility of subdural migration remains due to extreme rapidity of block onset.

Another unexplored area is the rate of onset and its spread, when chloroprocaine is injected in a 4 point position. A Medline search did not reveal any publications describing the spread of local anesthetic injected in this position. Theoretically, this would reduce paravertebral blood flow and increase the volume of the epidural space, thereby decreasing the spread of local anesthetic.

The patient came to no harm, and the outcome was good due to a vigilant anesthesia team. As can be seen from the timeline presented (supported with evidence), the total duration from the point of decision to proceed with LSCS to eventual fetal delivery was about 7 min. Nevertheless, some pertinent questions need to be addressed to avoid a recurrence.

Firstly, the practice of administering a rapid bolus-10 cc of 3% chloroprocaine, even for a level 1 LSCS needs re-evaluation. Apart from the possibility of subarachnoid catheter migration, breaches in the dura-arachnoid membrane can potentially hasten the cranial spread of local anesthetic at alarming rates to alarming heights. The sensitivity and specificity of testing using lidocaine with epinephrine are called into question.^[2-5] The incidence of catheter migration and duramater breach as factors contributing to a dangerously high block are unknown. As

a result, even in dire fetal situations, it may be unsafe to administer a rapid 10 cc bolus of chloroprocaine.

The practice of administering large epidural boluses while transferring a patient from the labor room to the operating room is a common but questionable practice. In our setup, the transfer takes less than 2 min. Although it is a small window of unmonitored patient care, as typified in our patient, the oxygen saturations had dropped to 75% before reconnecting to the monitors. It might be safer to have a portable pulse oximeter attached to the patient before injecting a bolus of local anesthetic, during operating room transfer.

The third question concerns the practice of chloroprocaine administration in 4 point position. Although, in general, patient position is not known to affect the spread of epidurally administered local anesthetics, in the absence of any other explanation, it remains a possibility. If possible, until more data are available, it might be safer to avoid such a practice. In the absence of any contraindication, general anesthesia should be considered. If epidural is preferred on the grounds of safety to the fetus and the mother, incremental administration after due positioning is the preferable option.

Conclusion

The practice of fixed bolus administration of chloroprocaine should be revisited. Administration of epidural boluses in a 4 point position needs further study. Continuous monitoring, even in a life threatening situation is mandatory.

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