ANAESTHETIC CHALLENGES IN A CASE OF PARTURIENT WITH ACHONDROPLASIA FOR EMERGENCY CAESAREAN SECTION

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Introduction

Term achondroplastic parturients may have cephalopelvic disproportion resulting in an increased incidence of Lower Section Caesarean Section (LSCS). Premature ossification of bones result in characteristic craniofacial abnormalities and is associated with atlanto-axial instability and macroglossia leading to difficult airway. With pregnancy, airway oedema and reduced functional reserve capacity further complicate intubation. Central neuraxial blockade (CNB) is challenging due to potential kyphoscoliosis, spinal stenosis, unpredictable spread of local anaesthetics in central neural space and uncertainty of dose due to disproportionate spinal column to overall height. Furthermore, in this case, we faced surgical factors of a prolonged operation with dense adhesions with the potential of postpartum haemorrhage.

Case Details

The parturient was a 33 year old, G3P2, 36 weeks gestation, with achondroplasia (height 126cm, weight 44kg). She was unfasted and presented for emergency LSCS for 2 previous LSCS in labour. She had disproportionately short limbs to spinal column height. Airway assessment showed potential difficult airway with small mouth opening, macroglossia and receding chin. She denied neck or back problems. A review of the anaesthetic chart for her previous LSCS showed that a single shot spinal with 2.1ml of 0.5% heavy bupivacaine required 1 gram phenylephrine in small aliquots to maintain utero-placental perfusion prior to delivery of the foetus. The spinal anaesthesia lasted for 1 hour and supplemental analgesia was required near the end. Total surgical time was 70 minutes.

As surgical time was expected to be prolonged due to adhesions, a combined spinal epidural (CSE) was done at L3/4. CSF backflow was slow but present and intrathecal 1.5ml 0.5% heavy bupivacaine, 15mcg fentanyl and 100mcg morphine was given. An epidural catheter was inserted smoothly.

References

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10 minutes later, there was no motor or sensory blockade present and a second CSE attempt with another dose of 1.5ml 0.5% heavy bupivacaine given. This produced a sensory block height of T2 before surgery commenced. 300 milligrams of phenylephrine was used throughout surgery in small aliquots to maintain utero-placental perfusion. However, 35 minutes later, she required a total of 13ml of epidural top up mixture consisting of 2% lignocaine, 1:200 000 adrenaline and 8.4% sodium bicarbonate and IV ketamine 20mg due to discomfort. Surgery ended uneventfully after 100 minutes.

Discussion

- Difficult airway
- Difficult CNB
- Dose of CNB

Achondroplastic patients have limited neck extension, large head, large tongue and narrowed nasal, oral, tracheal and pharyngeal airway (1). Airway oedema and large breast from term pregnancy further complicates airway management. Developmental stenosis of the cervical and lumbar canals is common in achondroplasia due to a premature fusion of the vertebrae. They can also have narrow spinal canal, reduced epidural space, kyphoscoliosis and vertebral body deformities. An MRI study by Jeong et al. found that their spinal canal interpedicular distance progressively narrows instead of widens (2). This may lead to failure of CNB and unpredictable block height. The dose of CNB has to be balanced with the risk of severe hypotension and high block. In addition, the gravid uterus in term pregnancy further increases block height. Danelli et al indicated the minimum effective dose of intrathecal bupivacaine providing effective spinal block in 95% of the women undergoing caesarean section is 0.06 mg/cm height (3). However, as surgical time could be longer than expected in our patient, CSE allows titration of block height and duration as required.

Conclusion

Achondroplastic parturients are more likely to present for LSCS and have several anaesthetic challenges such as difficult airway, difficult central neuraxial blockade and unpredictable spread of blockade. We recommend CSE in parturients with achondroplasia for LSCS to allow titration of CNB.