Anesthetic Management of Chiari I Malformation in an Obstetric Patient

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INTRODUCTION

- Arnold-Chiari malformations represent a group of intracranial structural abnormalities, classified by extent of anatomic defects. Among these, Chiari Malformation Type I (CM I) involves displacement of the cerebellar tonsils into the foramen magnum without brain stem involvement. The management of obstetric patients with CM I presents unique challenges due to the risk of increased ICP during labor and delivery. Valsalva maneuvers, spinal anesthesia and endotracheal intubation may lead to ICP changes and herniation, making individualized anesthetic plans crucial.

Case Description

- A 38-year-old G8P2 with a past medical history of CM I presented for scheduled Cesarean section. History and physical exam revealed the patient was diagnosed with Type I Chiari Malformation at age 30 and experienced symptoms of visual disturbances, headaches, and left-sided paresthesias. Previous cesarean section was performed due to meconium presence, prior to the diagnosis of CM1. The patient's neurologist recommended an elective Cesarean section for future deliveries, considering her diagnosis and resultant symptoms. The preoperative anesthetic evaluation demonstrated an absence of neurological symptoms. Although general anesthesia was recommended to minimize changes in ICP, spinal anesthesia was requested.

RESULTS & DISCUSSION

- Anesthetic concerns in laboring women with CM I are related to changes in ICP that may occur during the laboring process, neuraxial anesthesia, or endotracheal intubation, which may result in immediate neurological consequences. In this case, a successful spinal anesthetic was administered with strict maintenance of hemodynamic stability within 20% of baseline observed via regular BP cuff measurements and regular monitoring of neurological status. While general anesthesia is often recommended to minimize changes in ICP, patient preferences and potential benefits of spinal anesthesia should be carefully considered. Further research and guidelines are needed to enhance our understanding of the effects of labor, neuraxial, and general anesthesia on cerebral perfusion pressure and ICP fluctuations in patients with CM I.

CONCLUSION

- The successful use of spinal anesthesia in an obstetric patient with Arnold-Chiari Malformation Type I demonstrates the importance of individualized anesthetic management. While general anesthesia is often recommended, patient preferences and the potential benefits of spinal anesthesia should be carefully considered. Further research and guidelines are needed to enhance our understanding of the effects of labor on cerebral perfusion pressure and ICP fluctuations in patients with CM I. By promoting collaborative efforts and evidence-based practice, healthcare providers can optimize anesthetic plans and improve outcomes for obstetric patients with this complex neurological condition.

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