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Commentary

Role of Bupivacaine and Dexmedetomidine as an Adjuvant in Spinal Anaesthesia during Caesarean Section

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DESCRIPTION

The major surgical treatment known as a Caesarean Section (CS) is a life-saving procedure that poses a direct threat to the mother and the foetus as well as additional risks for subsequent pregnancies. The choice of General Anaesthesia (GA) or Regional Anaesthesia (RA) as particular anaesthetic strategies for treating CS is typically based on the anesthetist's preference and local policy, there is no obvious difference in superiority between the two. However, RA is becoming more popular among anesthesiologists. For instance, data from the United Kingdom reveal that RA is used in 94.9% of elective CS and 86.7% of emergent CS, respectively. The main issues with RA are caused by insufficient blocking and haemodynamic instability. Opioids, ketamine, midazolam, and alpha 2-agonists are some of the additions that have been testing in an effort to enhance block quality, provide better postoperative analgesia, and maintain stable hemodynamics during surgery. As a result, even in the postoperative setting, everyone requires constant monitoring and care.

Low-Dose (LD) intrathecal hyperbaric bupivacaine "LD Scheme" (8 mg) was being used more frequently in obstetric anaesthesia than the standard dose (8 mg). This is predicated on the idea that a higher Local Anaesthetic (LA) IT injection dosage will result in a greater degree of blockage and, thus, significant Sympathectomy-Induced Hypotension (SIH). Given an effective dosage in 50% of the population (ED50) and an effective dose in 95% of the population (ED95), respectively, both doses were equivalent to the values examined using dose-response curve modeling by logistic regression. Clonidine and Dexmedetomidine (DEX), two alpha-2 agonists that are non-opioid adjuvants, play a substantial role in extending the subarachnoid block's analgesic duration, which lowers the requirement for postoperative opioid administration. The analgesic benefits of neuro axial dexmedetomidine in non-obstetric settings have been confirmed by numerous clinical trials. While clonidine has been demonstrated to be an effective analgesic addition to Spinal Anaesthesia (SA) in patients receiving CS. Dexmedetomidine intrathecal injection demonstrated a safe profile in animal experiments with no evidence of induced neurotoxicity.

In recent years, researchers have focused on the ideal conditions for a pregnant woman to achieve an ideal intraoperative condition with stable hemodynamic, good postoperative analgesia, and early ambulation with minimal adverse effects on the mother and the fetus, targeting enhanced recovery after CS. Our findings indicated that the LD-DEX group demonstrated improved sensory block, prolonged postoperative analgesia, less dense motor block with quicker ambulation, stable maternal hemodynamic maintained by lesser amounts of fluids and ephedrine, and less shivering with no neonatal side effects. Although spinal anesthetic is frequently utilized during caesarean sections, it has a high rate of hypotension. Intrathecal adjuvant was advised to be used in spinal anesthesia to lessen the likelihood of hypotension, with the goal of lowering the dose of intrathecal local anesthetic, which can subsequently lessen the incidence of spinal-induced hypotension. Dexmedetomidine (Dex) has recently been studied for its potential to extend the duration of analgesia in peripheral and central nerve blocks. We hypothesized that Dex might also be able to improve intrathecal bupivacaine's effectiveness for spinal anesthesia during caesarean delivery. The purpose of this study is to confirm our hypothesis that Dex can improve the up-down allocation method's ability to increase intrathecal bupivacaine's efficacy. In patients scheduled for elective caesarean sections, the LD-DEX scheme (10 g dexmedetomidine +7 mg hyperbaric bupivacaine) is an effective option for intrathecal injection because it offers better sensory block, more stable maternal hemodynamic with fewer vasopressors and fluids, good postoperative analgesia, early ambulation, and shorter hospital stays.

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