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Case Report

Ultrasound guided continuous transversus abdominis plane block for postoperative analgesia after caesarean delivery in a patient with Wolff-Parkinson-White syndrome

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Abstract

Ultrasound-guided transversus abdominis plane block is an extremely attractive technique ensuring adequate perioperative analgesia. The use of ultrasound has enhanced the accuracy of local anaesthetic deposition in the plane between internal oblique and transversus abdominis, thereby blocking the spinal nerves more effectively and hence enhancing the efficacy of analgesia. Pregnancy is associated with higher frequency of arrhythmias in Wolff-Parkinson-White syndrome and poor perioperative pain management may contribute to life threatening arrhythmias. We report a case of Wolff-Parkinson-White syndrome posted for elective caesarean section, managed successfully under regional anesthesia with transverses abdominis plane block. The block and catheter were deposited under ultrasound guidance with continuous infusion of 0.2% of ropivacaine was used for postoperative pain relief. Dexmetedomidine was also used as intravenous adjunct at titrated dose of 0.4-0.6 mics/kg/min to attenuate maternal hormonal and hemodynamics during surgery.

Keywords: nerve blocks; pregnancy; ropivacaine; Wolff-Parkinson-White syndrome

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Introduction

White (WPW) syndrome accounts for the majority of supraventricular tachycardia (SVT) during pregnancy; with incidence of 1.2 per 1000 people.[1] Pregnancy is associated with an increased frequency of arrhythmia due to increased adrenergic sensitivity, increased plasma volume, anxiety.[2] Surgical stress during Caesarean Delivery (CD) and inadequate pain management may lead to life threatening arrhythmias perioperatively. The use of intermittent bolus

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analgesic may lead to inadeqaute pain control resulting in the usage of high dosage of opioids. To overcome this disadvantage there is increasing experience with the use of ultrasound guided indwelling catheters placement for the provision of postoperative analgesia.

This case report emphasizes the importance of the TAP block to provide perioperative analgesia in pregnant patient with WPW syndrome.

Case Report

Twenty four years old lady with WPW syndrome was planned for elective Caesarean delivery. She did not give any relevant treatment history for the WPW syndrome. Her pulse rate was 88 bpm, blood pressure was 130/90 mm Hg ad spO2 was 98%. All the other physical examination and laboratory parameter were unremarkable except for Electrocardiogram showed delta waves in all precordial leads. Standard anti-aspiration prophylaxis was given. In the operation theatre, intravenous access was secured with 18G cannula on her right hand after application of EMLA cream. Along with standard ASA monitoring, invasive arterial BP were monitored perioperatively. Left uterine displacement was maintained with wedge under right buttock and oxygen was supplemented.

Under all aseptic precaution, subarachnoid space was located and using 29G spinal needle 1.8 ml of 0.5% Bupivacaine heavy and 0.2ml (10 microgram) Fentanly was administered. A maintenance dose of Dexmeditomedine was titrated at 0.4-0.6 microgram/kg/min after administration of spinal anaesthesia and was titrated to Ramsay sedation score 2. The surgery commenced only after achieving a T4 sensory block confirmed with loss of sensation to cold.

Decrease in blood pressure was noted twice and was managed with titrated dose of phenylephirine. Other cardiovascular parameters remained stable during surgery. After baby was delivered, 3 units oxytocin and 50 mics Fentanyl were added intravenously.

A healthy female baby of 3.5 kilograms was born with a APGAR score of 7/10 -9/10 at 1 and 5 minutes respectively.

After the surgical procedure, catheter was placed bilaterally in lateral position, in Transverse Abdominal Plane (TAP) under sonographic guidance and bolus dose of 0.2% Ropivacaine 20 ml was administered on both side and the analgesia was maintained with continuous infusion of 0.2% Ropivacaine @ 2-3 ml/hr from both the catheter. Intravenous Paracetamol 1gm was used as rescue analgesic.

Postoperatively, we monitored the pain scores using visual analogue scale (VAS) for next 48 hour in the intensive care unit and patient's comfort was ensured. During the first 24 h postoperatively, VAS was 1-2. In the 29th hour postoperatively, when the VAS was 5, the patient required additional analgesia in the form of 1 g (100 mL) of paracetamol intravenously. At the end of 48 h postoperatively, the VAS was 4 and additional dose of paracetamol 1 g intravenously was given. Then the catheter was withdrawn and the patient was managed with oral paracetamol. The patient was then shifted to postnatal ward.

Discussion

Adequate pain relief after surgery is important as pain leads to many systemic adverse effects due to the stress response. Moreover, stress response due to inadequate pain control may aggravate tachaarrythmias in pregnant patient with WPW syndrome.

The aim of transversus abdominis plane block (TAP) block is to deposit local anaesthetic in the plane between internal oblique and transversus abdominis, thereby blocking the spinal nerves. The use of ultrasound has enhanced the accuracy of local anaesthetic deposition and hence the efficacy of analgesia.[2] Recently, TAP block constitutes an effective option for postoperative analgesic after CD performed under spinal anaesthesia. The definitive analgesic advantages of TAP block when added to multimodal analgesic regimens, as demonstrated in three recent trials, suggest a potential role of TAP block as part of the post-Caesarean multimodal analgesic regimen in practical settings.[3]

Dexmedetomidine, used before delivery in our case, negligibly cross the uteroplacental barrier and provides analgesia, sedation, sympatholysis, reduces anesthetic requirement and maintains maternal hemodynamics in parturient.[4]

Gleicher et al in a report of three pregnant patients, suggested that pregnancy may pre-dispose asymptomatic patients with pre-excitation to tachyarrhythmias.[5]

TAP block provides effective pain relief, and reduced post operative complications like nausea, vomiting, respiratory depression etc.[6] This results in earlier ambulation with improved infant care. Ropivacaine 0.25% as a post operative analgesia with less cardiotoxicity over Bupivacaine makes it a safer alternative for use in nerve block.[6] As demonstrated by our case, the postoperative analgesia was excellent with only two instances of VAS 4 or higher in 48 hours. Continuous TAP block also provides better postoperative analgesia, avoidance of haemodynamic instability, preservation of bladder and motor limb function, less incidence of post-operative nausea and vomiting, early mobilisation, and less opioids consumption.[6]

The disadvantage of the TAP block usage while ensuring adequate analgesia, is the requirement of the anaesthesiologist with expertise in ultrasound scanning, as it is essential to visualize the structures at all times to ensure the deposition of local anaesthetic in the correct plane. The other disadvantage of TAP block is the inability to block visceral pain, which can cause major discomfort. Though, the main component of pain arising after

abdominal surgery is from anterior abdominal wall itself.[7]

We preferred spinal anesthesia with dexmedetomidine for our patient because of reliable and profound block, spares patient from arrthymogenic effect of inhaled anaesthetics and avoiding laryngeal reflexes. We observed no significant hemodynamic changes during operative period with the use of dexmedetomidine as Nair and Sriprakash concluded that pre-operative administration of dexmedetomidine in a dose of 0.4 and 0.6 attenuates maternal hemodynamics and hormonal response to cesarean delivery without adverse neonatal effects.[4] Further, dexmedetomidine also decreases incidence of post-spinal shivering[8] reducing oxygen consumption and alleviating pain that decrease the possibility of tachyarrythmias.

In conclusion, Ultrasound-guided continuous transversus abdominis plane block in pregnant patients with WPW syndrome scheduled for cesarean section is viable option for adequate postoperative analgesia.

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