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CLINICAL INFORMATION

Do we still need central blocks while we have erector spinae plane block? Case of 2.5 month old infant



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KEYWORDS

Erector spinae plane block;
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Abstract

Erector spinae plane block is gaining popularity both for its ease of application and as its comparable effect on postoperative analgesia with central regional techniques like paravertebral block or epidural anesthesia. Its use for many indications has been reported in the literature for pediatric patients. We would like to share our experiences in a 2.5-month infant scheduled for thoracotomy for a giant congenital cyst. Single shot erector spinae plane block was done at T4 level before the start of the surgery for both surgical and postoperative analgesia. No complication was seen during both surgery and follow up period. Erector spinae plane block with the combination of paracetamol was adequate for pain relief.

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PALAVRAS-CHAVE

Bloqueio do plano do eretor da espinha;
Analgésia pós-operatória;
Cirurgia pediátrica;
Dor pós-toracotomia;
Analgésia epidural

Ainda precisamos de bloqueios centrais enquanto temos o bloqueio do eretor da espinha? Caso de criança de 2,5 meses de idade

Resumo

O bloqueio do plano do músculo eretor da espinha está ganhando popularidade, tanto pela facilidade de aplicação quanto pelo efeito comparável em analgesia pós-operatória com técnicas regionais centrais, como o bloqueio paravertebral ou a anestesia peridural. Seu uso tem sido relatado na literatura para muitas indicações em pacientes pediátricos. Gostaríamos de compartilhar nossas experiências no caso de um bebê de 2,5 meses de idade programado para toracotomia para excisão de um cisto congênito gigante. O bloqueio do plano do eretor da espinha dorsal com injeção única foi realizado no nível de T4 antes do início da cirurgia para

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analgesia cirúrgica e pós-operatória. Nenhuma complicação foi observada durante a cirurgia e o período de acompanhamento. O bloqueio do plano do eretor da espinha com a combinação de paracetamol foi adequado para o alívio da dor.

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Introduction

Providing analgesia after thoracotomy is a challenging task because the goal is not just about relieving a surgical pain but also providing ideal conditions for normal pulmonary functions. In addition inadequate pain management can lead to prolongation of the stay in the ICU, delay in the return to daily activities, increase in pulmonary complications and persistent or chronic postoperative pain.¹

Thoracic Epidural Analgesia (TEA) and Paravertebral Block (PVB) has long been the most commonly preferred regional techniques for this purpose.¹ As these are more advanced regional anesthesia techniques, even in adult patients, their use for pediatric patients is limited. Although the total risk of major complications are less with PVB when compared to TEA, PVB has its own complication risks as pleural puncture.

Erector Spinae Plane Block (ESPB) was first defined for thoracic neuropathic pain but, till then, its use for post-operative analgesia for many different indications including thoracic procedures has been reported for both adult and pediatric patients.²⁻⁴ ESPB has gained popularity as it is thought to be a safer and easier alternative to central regional anesthesia techniques. We would like to share our experience and discuss the effectiveness of ESPB by a case of 2.5-month old, 4 kg infant scheduled for thoracotomy for congenital left pulmonary giant cyst.

Case

Following sedation with oral midazolam (0.5 mg. kg^{-1}) patient was taken to the operating room. After standard electrocardiogram, pulse oxymeter and noninvasive blood pressure monitorization anesthesia induction was done with facemask 8% sevoflurane and 50% air in oxygen. A 24 gauge iv cannula was placed and remifentanyl $1 \mu\text{g. kg}^{-1}$ and propofol 2 mg. kg^{-1} were administered. After adequate anesthesia was maintained patient was intubated without using muscle relaxant. Anesthesia maintenance was provided with Sevoflurane 2%–3% inspired concentration, in combination with nitrous oxide in oxygen with a ratio of 2:1 in 3L of fresh gas flow due to keep the minimum alveolar concentration 1.3. Afterwards, an arterial cannulation was done for invasive blood pressure and an internal jugular central venous catheter was placed on the left side. Rectal temperature, inspiratory and expiratory gas analysis and ETCO_2 monitorization were also provided.

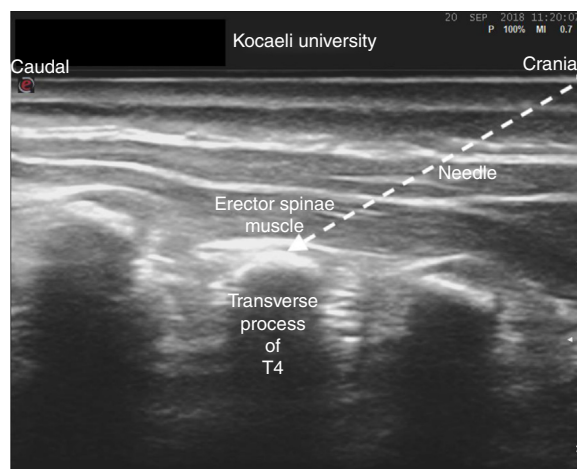


Figure 1 Bupivacaine injected for the block performance.

Following the right lateral decubitus position for surgery, Erector Spinae Plane Block (ESPB) was performed at T4 due to the level of the planned thoracotomy. Esaote My Lab 6 US machine (Florence, Italy) with large bandwidth, multifrequency linear probe (6–19 MHz) and a 22 G, 50 mm, insulated facet type needle (BBraun Sonoplex, Melsungen, Germany) was used. Bupivacaine $0.25\% \text{ 1 mL. kg}^{-1}$ injected for the block performance after identifying the sonoanatomy of the block site (Fig. 1).

Twenty minutes after the block, hypotension occurred and treated with iv volume therapy. After this period, during the surgery, hemodynamic parameters were stable. No additional opioid was used. Surgery lasted 2 hours and at the end a chest drain was inserted at the 5th intercostal space. Was administered 15 mg. kg^{-1} iv paracetamol to the patient. The patient was taken to pediatric intensive care unit intubated and sedated with midazolam infusion till the extubation period. Paracetamol 15 mg. kg^{-1} iv per 6 h was prescribed for postoperative first 24 hours for routine analgesia; and pain management for rescue analgesia was planned to be done according to Face, Leg, Activity, Cry, Consolability Revised (FLACC-R) score. If FLACC-R scores were greater than 2, tramadol 1 mg. kg^{-1} iv was planned as rescue analgesia for postoperative first 24 hours. For the postoperative second 24 hours, acetaminophen 15 mg. kg^{-1} iv was planned as rescue analgesia in case of FLACC scores between 2 and 4, and tramadol 1 mg. kg^{-1} iv as rescue analgesic in case of FLACC scores greater than 4.

Patient was extubated at postoperative 12th hour and no complication occurred during follow up period. Due to FLACC-R pain scores (≤ 2 at all times) no additional rescue analgesic was used for 48 hours.

Discussion

ESPB is an interfascial plane block, where the transverse process makes a natural border between the block site and major central anatomical structures. There are a few studies with controversial results in the literature for exact mechanism of action of ESPB and the LA spread in this block has not clearly identified. Recently Adhikary et al.⁵ showed epidural spread as the mechanism of ESPB, which could explain the clinical outcomes of the case reports published.

For effective treatment of thoracotomy pain, continuous analgesia by epidural or paravertebral catheters has been discussed in the current literature and recommended as first line therapy.¹ Their combination with non-opioid analgesics like acetaminophen and NSAIDs is also recommended. In our case, a single shot ESPB along with paracetamol administration has found as an adequate analgesia method. Also with this preoperatively ESPB, the surgery could be done without the use of any other opioid drug.

In conclusion, according to our clinical experiences and results of the published studies in the literature along with this case report, we think that ESPB could be a safer new alternative to TEA and PVB. Future studies with large case series are still needed to enlighten this issue.

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Conflicts of interest

The authors declare no conflicts of interest.

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