

Analgesia with blockage of the erector plane of the spine in the postoperative period of cardiac surgery. Case report

Analgesia pós-operatória em cirurgia cardíaca pelo bloqueio do plano eretor da espinha. Relato de caso

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ABSTRACT

BACKGROUND AND OBJECTIVES: Persistence of pain in the postoperative thoracic region is very common with conventional analgesia performed only with opioids, which prolongs recovery, increasing costs and morbidity. Erector spinae plane blockage is a promising technique for the analgesic control in the postoperative period of cardiac surgeries. The purpose of this study was to describe a case in which erector spinae plane blockage provided adequate postoperative analgesic control.

CASE REPORT: A 61-year-old male patient submitted to elective cardiac surgery for left ventricular aneurysmectomy and coronary artery bypass grafting. On the first postoperative day presented pain of intensity 8 on the visual analog scale in the left hemithorax. The patient underwent erector spinae plane blockage with a catheter located at T5 guided by ultrasound with a 17G Tuohy needle and injection of 20mL of 0.5% ropivacaine providing important decrease and improvement of pulmonary expansibility.

CONCLUSION: Erector spinae plane blockage provided adequate analgesia and was considered a good therapeutic option.

Keywords: Analgesia, Opiate substitution treatment, Pain postoperative, Thoracic surgery.

RESUMO

JUSTIFICATIVA E OBJETIVOS: A persistência da dor na região torácica no pós-operatório é muito comum com analgesia convencional realizada apenas com opioides, o que prolonga a recuperação, aumentando os gastos e a morbidade. O bloqueio do plano eretor da espinha é uma técnica promissora no controle analgésico no pós-operatório das cirurgias cardíacas. O objetivo deste estudo foi descrever um caso em que o bloqueio do plano eretor da espinha propiciou adequado controle analgésico pós-operatório.

RELATO DO CASO: Paciente do sexo masculino, 61 anos, submetido à cirurgia cardíaca eletiva de aneurismectomia do ventrículo esquerdo e revascularização do miocárdio. No primeiro dia de pós-operatório apresentou dor de intensidade 8 pela escala analógica visual em hemitórax esquerdo. Foi submetido ao bloqueio do plano eretor da espinha com cateter locado em T5 guiado por ultrassom com agulha Tuohy 17G e injeção de 20mL de ropivacaína a 0,5%, propiciando importante diminuição e melhora da expansibilidade pulmonar.

CONCLUSÃO: O bloqueio do plano eretor da espinha promoveu analgesia adequada, sendo considerado como uma boa opção terapêutica.

Descritores: Analgesia, Cirurgia torácica, Dor pós-operatória, Tratamento de substituição de opioides.

INTRODUCTION

The opioid crisis has forced analgesic options to be reconsidered, maximizing multimodal analgesia and regional techniques, with improvements in ultrasound imaging technology in order to provide perioperative analgesia¹. Post-surgical chest pain hinders recovery and may increase the risk of perioperative morbidity, so it's important to treat it adequately, if possible, by reducing the use of opioids¹⁻³.

Chest wall pain caused by surgical access and at the site of chest drains may become chronic if acute pain is inadequately treated. An alternative for the control of postoperative chest pain is the ultrasound-guided erector spinae plane blockage (ESPB) associated with conventional pharmacological control¹.

The objective of the present study was to report a case of analgesic control in a post-operative period of cardiac surgery using ESPB in the intensive care unit. The case report was approved by the Ethics Committee of the Goiânia Emergency Hospital, under the CAAE 10217013.20000.0030.

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CASE REPORT

Male patient, 61-year-old, hypertensive, smoker, with chronic obstructive pulmonary disease (COPD) and previous acute myocardial infarction (AMI), suffering from coronary insufficiency and aneurysm of the left ventricular inferior wall. The patient underwent elective cardiac surgery for left ventricular aneurysmectomy and coronary artery bypass grafting with mammary bypass in the anterior descending coronary artery and saphenous vein bypass in the right coronary artery, coronary *diagonalis* and diagonal coronary.

Intraoperatively, the patient received 40µg of sufentanil, 20µg of which at induction, 1h before sternotomy, the phase of greatest painful stimulus. On the first postoperative day, the patient presented pain intensity 8 on the visual analogue scale (VAS) in the left hemithorax, worse at the chest drain insertion site, with shallow breathing and increased painful area in the inferolateral region of the left chest, despite the use of intravenous morphine

analgesia, preventing physical therapy. Due to the intensity of pain even with high doses of morphine, a ESPB was performed with a catheter located in the T5 guided by ultrasound with a 17G Tuohy needle (Figure 1) and injection of 20mL of 0.5% ropivacaine before the physical therapy session. After 30 minutes, the pain intensity assessed by VAS decreased to 2, lasting about 8 hours. A new dose of 20mL of 0.5% ropivacaine was given resulting in important pain improvement, which decreased to 1 by VAS, with improved lung expansibility (Figure 2).

The third and last ropivacaine injection was applied after 12h, since after the third ropivacaine dose the chest drain was removed. The patient had a good development, remaining in the Intensive Care Unit for three days, with no need for orotracheal intubation, with a significant improvement in pulmonary expansibility shown on chest X-ray after non-invasive ventilation and better analgesic control.

DISCUSSION

Ultrasound-guided ESPB provided adequate analgesia, enabling physical therapy sessions with greater efficiency and improved chest expansion. Only three interventions were necessary to allow adequate pain control until removal of the chest drain.

Adequate postoperative pain control is primordial for the patient's full recovery, avoiding the chronification of pain, improving patient satisfaction, contributing to a shorter hospital stay, with a reduced risk of infection and pulmonary complications^{2,5}. In the postoperative period of cardiovascular surgeries, thoracic pain control can become a great challenge. The use of high doses of opioids is not always effective for a good analgesic control and, furthermore, it can generate chemical dependence, which leads to greater morbidity and costs³.

Persistent pain in the thoracic region due to ineffective analgesia may limit lung expansibility, thereby reducing ventilatory capacity and being associated with functional incapacity, which makes weaning from mechanical ventilation difficult^{1,2}. New

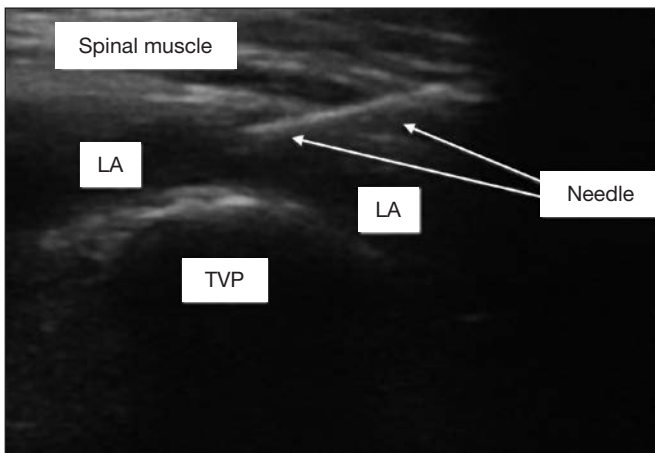


Figure 1. Erector spinae plane blockage with ultrasound image of the needle, the transverse vertebral process (TVP), the spinal muscles and the spread of the local anesthetic (LA).



Figure 2. Chest X-rays exhibiting lung expansibility after erector spinae plane blockage

approaches in analgesic control in these surgeries are important for a more comfortable and safer postoperative period, allowing a reduction in mechanical ventilation time with improved lung expansion⁵.

ESPB with catheter was initially used for analgesia of multiple rib fractures and control of refractory herpetic pain and presented good results in analgesic control⁴. This technique has the advantage of not invading the neuroaxis, not presenting contraindications for anticoagulation, being a promising option in postoperative pain control of cardiovascular surgeries⁶.

ESPB acts by diffusing the local anesthetic into the paravertebral and intercostal spaces. Depending on the level of injection, the diffusion through the paravertebral space in the cephalic-caudal direction provides analgesia from C7-T2 to L4-5, and it can block thoracic spinal nerves⁴. There is evidence that the site of action of the drugs is in the dorsal and ventral branches of the spinal nerves^{5,6}.

The use of ESPB in the treatment of neuropathic thoracic pain is recent^{6,7}. The complications related to ESPB are rare, and because it's an ultrasound-guided technique, the risk of pneumothorax diminishes. Rare complications are the transient decrease in motor strength when the local anesthetic diffuses to the lumbar plexus when the blockage is done in the lower thoracic or lumbar areas, and also systemic toxicity of the local anesthetic, which can occur with the use of high volumes that spread to the paravertebral and intercostal spaces, as well as to richly vascularized muscles⁶.

In thoracic surgeries, postoperative pain is intense due to sternotomy, rib retraction, incision of chest wall muscles and drains, which can cause several complications if pain is not properly treated⁷⁻⁹. For analgesia after open thoracic surgery, there are several reports and case series with the successful use of catheters for analgesia of posterolateral thoracotomy⁹.

A randomized clinical trial¹⁰ compared opioid consumption and pain intensity after single-injection blockages with a control group treated conventionally. There was less opioid consumption and less pain perception in the group submitted to the blockage, as well as lower rates of nausea or pruritus¹⁰. The authors emphasize that ESPB acts adequately as a suitable opioid sparing agent for patients undergoing thoracic surgery¹⁰. Randomized clinical trials on ultrasound-guided are needed to verify the potential of ESPB in the treatment of cardiac surgery postoperative pain.

CONCLUSION

This report evidenced adequate control of thoracic pain in the postoperative of cardiac surgery by ESPB, enabling adequate physical therapy and better recovery of the patient.

AUTHORS' CONTRIBUTIONS

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Data Collection, Research, Writing - Preparation of the original, Writing - Review and Editing

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Data Collection, Conceptualization, Writing - Preparation of original, Writing - Review and Editing, Supervision, Validation, Visualization

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Data Collection, Methodology, Writing - Review and Editing, Supervision, Visualization

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Data Collection, Resource Management, Project Management, Research, Writing - Review and Editing, Supervision, Validation

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