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Case Report

Using a Paravertebral Block Anaesthetic Technique for Video-assisted Thoracic Surgery: A Case Report

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Abstract

Thoracic paravertebral block (TPB) can be administered for VATS (video-assisted thoracic surgery) method and often used for analgesic purposes and provides good results. Awake VATS (AVATS) has been increasingly employed in a variety of procedures involving pleura, lungs, and mediastinum. AVATS had been reported local anesthesia and sedation, intercostal blocks or TEA was used regarding regional anesthesia in many studies. We present case undergoing AVATS accompanied by TPB.

A male, aged 63, previously diagnosed with prostatic cancer with lung metastases and unilateral pleural effusions on the right side underwent paravertebral block anaesthetic technique for Video-Assisted Thoracic surgery due to comorbidities and an assessment of ASA IV (16 points). The VATS was performed after a successful paravertebral block with ropivacaine on level Th5 and sedation with dormicum and ketamine. We measure the conches of the patient with visual analogue scale (VAS). The score was 3-4 point, which is measure like mild sedation.

Keywords: Thoracic Paravertebral Block; Awake Video-assisted Thoracic Surgery

Introduction

Thoracic paravertebral block (TPB) is one of the regional anesthesia methods that can be administered alone or in combination with general anesthesia during many kinds of surgical operations. Ensuring more effective analgesia and fewer side effects compared to other regional anesthesia methods makes paravertebral anesthesia as a current approach for minimally invasive thoracic surgery operations for recent years. TPB has been used in many surgical procedures such as thoracotomy, VATS (Video Assisted Thoracoscopic Surgery), breast surgery, minimally invasive cardiac surgery, inguinal hernia repair, cholecystectomy, and nephrectomy. One paravertebral injection block can be administered for VATS method and often used for analgesic purposes and provides good results [1]. Awake VATS operations without mechanical ventilation were earlier used only for pleural biopsy for diagnostic purposes. Potential cases for AVATS technique performed with awake regional anesthesia are minor cases for healthy patients and high-risk cases where intubation is inconvenient to apply. The short duration of the operation and careful patient selection is necessary [2].

Case

We present the case of male, aged 63, diagnosed with prostatic cancer 6 years ago. Afterwards a PET-scan discovered multiple lung metastases and pleural effusions in the right half of the thorax. The patient was admitted for VATS due to pleural effusion of 3 litters in the right half the thorax. A VATS was performed in order to evacuate the effusion. As there were serious signs of carcinoma intoxication, heart failure and arterial hipertony the ASA score was estimated as IV (16-points). Standard intubation anesthesia with

two lumen tube was dangerous. A paravertebral block on level Th5 was performed. The block was performed by using a Tuohy needle 18G. Then 75 mg of ropivacain was injected. Then non-intubation technique was used in conjunction with mild sedation of the patient with 40 mg of ketofal and 1 mg midasolami. v. and oxygen was delivered through a face mask (5L/min) (Figures 1,2). The patient remained conscious during the procedure but a full analgesic effect was achieved. There were no signs of tachycardia, sweating or other symptom connected to pain.

After the procedure the analgesic effect of the paravertebral block lasted for 1,5 more hours.

Figure 1

Figure 2

Discussion

The first thoracic paravertebral application to provide muscle relaxation and analgesia during abdominal surgery was performed by Hugo Sellhe in 1905 in Leipzig. It many techniques was proposed to improve the efficiency of the process since then. Among these, the most widely used and safe methods are the one of the developed by Greengrass. According to this technique, the paravertebral space is reached advancing the needle to caudal after contacting with the transverse process [3]. In recent years, it has been reported that ultrasound-guided [6] and nerve stimulator-guided [4]. TPB, will increase the security and effect of the operation. TPB practices and techniques is relatively easy compared to other regional anesthesia methods. Technical success rate is higher. The failure rate of PVB is 6.1% with a single injection and 10.7% with multiple injection. The main complications associated processing as vascular injury (6,8%), hypotension (4%), epidural or intrathecal injection (1%), pleural injury (0,8%) and pneumothorax (0.5%). Other possible complications may be listed as infection at the injection site, hematoma, local anesthetic toxicity [5]. It is known that VATS technique with one lung ventilation under general anesthesia increases the risk of pneumonia as a result of deep sedation and muscle relaxation, reduces cardiac performance, causes neuromuscular problems. Also, many complications can develop such as laryngotracheal spasm, esophageal or tracheal rupture, tooth fracture, mandibular subluxation, tracheal aspiration cardiac arrhythmia depending on endotracheal intubation [6]. Also, one-lung ventilation lung damage, and can lead to edema pneumothorax [7]. Although regional anesthesia have such complications as slow start, failed or inadequate block, high or total spinal block, headaches, spinal/epidural hematoma, intravascular injection, local anesthetic toxicity, neurological deficits, nausea, vomiting, hypotension; compared to general anesthesia, mortality; effects on cardiovascular, pulmonary, gastrointestinal and coagulation system, cognitive functions; major morbidity on immune and stress response are known to be less. Although some minor risks of TPB may occur during AVATS with TPB, it is possible to prevent significant complications related to general anesthesia and intubation [8].

Conclusion

AVATS with TPB have good intra and postoperation analgesia, it also constitutes fewer side effects and less risk of complications

compared with other regional anesthesia techniques and general anesthesia. This allows early discharge, early mobilization, early oral feeding and to avoid the risks posed by general anesthesia and intubation. However, strict monitoring of the oxygen saturation, ECG, pulse and pain level is required.

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