PERIODICUM BIOLOGORUM
VOL. 115, No 2, 275–277, 2013

UDC 57:61
CODEN PDBIAD
ISSN 0031-5362

Clinical experience

Paravertebral blockade as indication, not as anesthesia choice – two case reports

JASMINKA PERŠEC
MIROSLAV ŽUPČIĆ
ANĐELKO KORUŠIĆ
IVANA TUDURIĆ ĐENO
INO HUSEDŽINOVIĆ

Clinical Department of Anesthesiology
Reanimatology and Intensive Care Medicine
University Hospital Dubrava, Zagreb, Croatia

Correspondence:
Jasminka Peršec MD PhD
Clinical Department of Anesthesiology
Reanimatology and Intensive Care Medicine
University Hospital Dubrava, Zagreb, Croatia
E-mail: jpersec@xnet.hr

Received May 20, 2013.

Abstract

Background and purpose. *We present two case reports of patients with ASA IV status, scheduled for surgery due to a malignant process. They were contraindicated for general anesthesia so we decided to perform paravertebral blockade.*

Patients and Methods: *Case 1. A 84-year-old female patient was scheduled for operation because of a malignant process in the left axillary region. She was an ASA IV patient with a suspected malignant process in the lung, bilateral tumor of suprarenal glands, hypothyreosis, and chronic renal insufficiency. Chest X-ray showed decompensated heart. Case 2. A 69-year-old male patient was scheduled for operation of malignant melanoma on the back. He was an ASA IV patient with implanted cardiac electrostimulator, liver cirrhosis, and obstructive lung disease. Chest X-ray showed decompensated heart. Paravertebral space was identified with ultrasound using 8 Hz linear transducer probe. Additionally, needle position was confirmed with neurostimulation. When muscle contraction persisted at 0.4 mA, an anesthetic was applied in levels of Th1, Th2, and Th3 (5 ml per level); in first case, a mixture of 7.5 ml 0.5% levobupivacaine [Chirocaine®, Abbott Laboratories] and 7.5 ml 2% lydocain [Lidocaine®, Belupo], and in second case, 15 ml 0.5% levobupivacaine.*

Results: *Sensory blockade occurred after 15 minutes in the first case, and after 20 minutes in the second case. The surgery was without complications. In the first case, sensory blockade lasted for 4.5 h after block was administered, which is 3h after surgery, and 12 h after blockade or 10 h after surgery in the second case.*

Conclusion: *At 24h postoperative interview, both patients were very satisfied with the anesthesiology treatment, and no complications occurred.*

INTRODUCTION

We present two case reports of patients with ASA IV status, scheduled for plastic surgery due to a malignant process. They were contraindicated for general anesthesia so we decided to perform paravertebral blockade.

Case 1. A 84-year-old female patient was scheduled for operation because of a malignant process in the left axillary region. She was an ASA IV patient with the suspected malignant process in the lung, bilateral tumor of suprarenal glands, hypothyreosis, and chronic renal insufficiency. At that time she was decompensated, with known stenosis of aortic

valvula. X-ray showed diffuse interstitial highlighted, left basal suspicious tumorous lesion and, in apicoposterior subpleural left upper lobe, a nodule 9 mm in diameter, also suspicious for metastasis. Heart ultrasound revealed low heart ejection (EF 37–40%), left atrial enlargement, borderline left ventricular, septal dyskinesia of the type of left bundle branch block, and mild aortic stenosis. Electrocardiogram showed left bundle branch block.

Case 2. A 69-year-old male patient was scheduled for operation of malignant melanoma on the upper part of the back. He had ASA IV status with implanted cardiac electrostimulator, liver cirrhosis, obstructive lung disease, high blood pressure, atrial fibrillation, and ventricular tachycardia. Chest X-ray showed decompensated heart. Heart ultrasound showed severe dilated cardiomyopathy, moderate and severe insuficiency of mitral valve and tricuspid valve, severe pulmonary arterial hypertension with the pressure up to 70 mmHg in pulmonary artery. Electrocardiogram showed left bundle branch block and atrial fibrillation, with frequent ventricular extrasystole.

MATERIALS AND METHODS

After arrival in the operating room (without premedication), the patients were monitored for vital parameters using noninvasive monitoring. After sterile washing of the dorsal surface, paravertebral space was identified with ultrasound using 8 Hz linear transducer probe. Additionally, paravertebral space was confirmed with neurostimulation started at 1 mA. To perform paravertebral blockade, we used a 10 cm long ultrasound and neurostimulator needle [Stimuplex D®, BBraun Melsungen]. When muscle contraction persisted at 0.4 mA, an anesthetic was applied in three levels of Th 1, Th2, and Th3 (5 ml per level) in order to adequately satisfy anesthetic and analgesic surgery needs; in the first case a mixture of 7.5 ml 0.5% levobupivacaine [Chirocaine®, Abbott Laboratories] and 7.5 ml 2% lydocain [Lidocaine®, Belupo], and in the second case 15 ml 0.5% levobupivacaine.

RESULTS

Sensory blockade occurred after 15 minutes in the first case, and after 20 minutes in the second case. During surgery, both patients were continously monitored and sedated with propofol using minimal dose (30 mcg/kg/min). The patients were hemodynamically stable, and the course of the surgery was without complications. In the first case, sensory blockade lasted for 4.5 h after block was administered, which is 3h after surgery, and 12 h after blockade or 10 h after surgery in the second case. At postoperative interviews 24 h after the surgery, both patients were very satisfied with the anesthesiology treatment, and no complications occurred. During postoperative period there was no need for additional intravenous analgesics.

DISCUSSION

We present two patients who where contraindicated for general anesthesia. Because both of them were scheduled for malignant process surgery, we decided to perform paravertebral blockade. There are several studies that compare paravertebral block to general anesthesia. *Tahiri et al*. have investigated results of 11 relevant studies which compared thoracic paravertebral block to general anesthesia. Pain scores were significantly decreased at 1h and 6 h postoperatively, and postoperative analgesic consumption was significantly lower in patients who received paravertebral blockade *(1)*. *Greengrass et al.* compared the safety and efficacy of paravertebral block as a sole anesthetic technique for intraoperative and postoperative management of modified radical mastectomy with those of general anesthesia. Surgery was successfully completed in 85% of the cases attempted by using paravertebral block alone, and in 91% of cases the surgery was completed by using paravertebral block supplemented with local anesthetic infiltration. Complications were observed in 2.6% of patients *(2)*. *Pusch F et al*. have investigated single-injection unilateral paravertebral block given at the level of T4, for patients undergoing breast surgery for breast malignancy. The surgical procedures varied from wide local excision of a tumor to modified radical mastectomy with axillary dissection. Recovery from anesthesia or sedation was shortened, while postoperative pain scores, the incidence of vomiting and requirement for analgesics were lower in the paravertebral group. Patients with axillary dissection had higher postoperative pain scores compared to all others in both groups *(3)*. These investigations used 0.5% bupivacaine as a sole anesthetic. Our selection of anesthetics was based on the need for faster onset but, also, the duration of sensory blockade extended for several hours after surgery (3h in the first case and 10h in the second case) and, by using small quantities of anesthetics at different levels, we wanted to prevent the communication of anesthetic from paravertebral to epidural space.

Although the benefit of paravertebral block seems to be confirmed in major breast procedures, its place in minor breast surgical procedures remains to be investigated. *Terheggen M et al*. have investigated the effect of paravertebral blockade on minor breast surgical procedures. Though the pain relief was superior compared to general anesthesia, this difference was only marginal.

Authors concluded that, considering the risk/benefit ratio, general anesthesia is still favored for minor surgical procedures on the breast *(4)*.

In conclusion, we performed paravertebral blockade in cases when general anesthesia was contraindicated. Both patients were very satisfied with the anesthesiology treatment and no complications occurred.

REFERENCES

1. TAHIRI Y, TRAN DE Q H, BOUTEAUD J, XU L, LALONDE D, LUC M, NIKOLIS A 2011 General anaesthesia versus thoracic paravertebral block for breast surgery: A meta-analysis. *J Plast Recontr Aesthtet Surg 64:* 1261-9
2. GREENGRASS R, WELTZ C R, IGLEHART J D 1998 Use of paravertebral block anaesthesia in surgical management of breast cancer. *Annals of surgery 227:* 496–501

3. PUSCH F, FREITAG H, WEINSTABL C 1999 Single-injection paravertebral block compared to general anaesthesia in breast surgery. *Acta Anaesthesiol Scand 43:* 770–4
4. TERHEGGEN M, WILLE F, BOREL R, IONESCU T, KNAPE J 2002 Paravertebral blockade for minor breast surgery. *Anesth Analg 94:* 355–9
5. SAITO T, DEN S, CHEEMA S P, TANUMA K, CARNEY E, CARLSSON C, RICHARDSON J 2001 A single-injection, multi--segmental paravertebral block-extension of somatosensory and sympathetic block in volunteers. *Br J Anaesth 86:* 598-9
6. HILL S E, KELLER R A, SMITH M S, GRICHNIK K, WHITE W D, D'AMICO T A, NEWMAN MF 2006 Efficacy of single-dose, multilevel paravertebral nerve blockade for analgesia after thoracoscopic procedures. *Anesthesiology 104:* 1047–1053
7. PINTARIC T S, POTOCNIK I, HADZIC A, STUPNIK T, PINTARIC M, JANKOVIC V N 2011 Comparison of continuous thoracic epidural with paravertebral block on perioperative analgesia and hemodynamic stability in patients having open lung surgery. *Reg Anesth Pain Med 36:* 256-60