



REVISTA BRASILEIRA DE ANESTESIOLOGIA

Publicação Oficial da Sociedade Brasileira de Anestesiologia
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CLINICAL INFORMATION

Anesthetic management of nephrectomy in a chronic obstructive pulmonary disease patient with recurrent spontaneous pneumothorax



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Received 4 December 2013; accepted 5 February 2014

Available online 12 March 2014

KEYWORDS

Chronic obstructive pulmonary disease;
Pneumothorax;
Nephrectomy;
Regional anesthesia

Abstract Nephrectomies are usually performed under general anesthesia alone or in combination with regional anesthesia and rarely under regional anesthesia alone. We report the management of a patient with chronic obstructive pulmonary disease with a history of recurrent spontaneous pneumothorax undergoing nephrectomy under regional anesthesia alone.

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PALAVRAS-CHAVE

Doença pulmonar obstrutiva crônica;
Pneumotórax;
Nefrectomia;
Anestesia por condução

Controle anestésico de nefrectomia em paciente com doença pulmonar obstrutiva crônica e pneumotórax espontâneo recorrente

Resumo Geralmente, as nefrectomias são feitas sob anestesia geral, isoladamente ou em combinação com anestesia regional, e raramente sob anestesia regional sozinha. Relatamos o tratamento de um paciente com doença pulmonar obstrutiva crônica e história de pneumotórax espontâneo recorrente submetido à nefrectomia sob anestesia regional isolada.

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Introduction

Upper abdominal surgeries, advanced age, and chronic obstructive pulmonary disease are among the most impor-

tant predictors of high risk for postoperative pulmonary complications.¹ In a chronic obstructive pulmonary disease (COPD) patient, maintenance of spontaneous respiration with regional anesthesia has been found to be associated with better post-operative pulmonary function.² Most of the upper abdominal surgeries, especially nephrectomies, are performed under general anesthesia alone or in combination with regional anesthesia because of surgical position of the patient (lateral decubitus with kidney bridge) and prolonged

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duration of surgeries. Very few cases of nephrectomy have been described using regional anesthesia alone.^{3,4} We report a patient with COPD, with past history of recurrent spontaneous pneumothorax, posted for nephrectomy, managed under regional anesthesia alone.

Case report

A 60-year-old man diagnosed with a huge hydronephrotic left kidney was posted for nephrectomy. Preanesthetic evaluation revealed that patient was treated for pulmonary tuberculosis three years ago. Patient was a known case of COPD and had three episodes of spontaneous tension pneumothorax in the past one year which required hospitalization and intercostal drainage (ICD) insertion. The patient had no other coexisting diseases. On examination, he was 175 cm tall, weighed 60 kg and had grade 3 clubbing of all fingers. Trachea was shifted to left and there were three scars in the right infraaxillary region due to the previous ICD insertions. Bronchial breath sounds were heard in the left infraclavicular and axillary regions. Chest roentgenogram showed fibrosis in the upper lobe of left lung and compensatory emphysematous change in the right lung. CT thorax confirmed the chest roentgenogram findings. CT abdomen showed a huge hydronephrotic left kidney occupying more than half of the abdomen. Other investigations were within normal limit.

Patient was explained about the options of anesthesia for the above surgery and also about the possible complications with general anesthesia and advantages of regional anesthesia in view of his respiratory problems. The patient agreed for regional anesthesia. The same was discussed with the surgeon. A combined spinal epidural anesthesia was planned. Patient was premedicated with Tab. Alprazolam (0.5 mg PO) at night and the morning of surgery.

In the operation theatre, after initiating standard monitoring, under aseptic precautions, in sitting position, epidural space was identified by loss of resistance to air technique with 18G Tuohy needle at T7-8 level and 20G epidural catheter was inserted and fixed at 8 cm. Under aseptic precautions, at L2-3 space lumbar puncture was done with 26G Quincke's needle and 3.5 mL of 0.5% Bupivacaine Heavy was injected intrathecally. With spinal anesthesia, sensory block up to T8 was achieved. Epidural bolus of 8 mL of 0.5% Bupivacaine was given to achieve anesthesia up to T4 level. Epidural anesthesia was maintained with epidural infusion of 0.5% Bupivacaine at the rate of 8 mL/h. Patient was positioned in right lateral position for removal of grossly enlarged hydronephrotic left kidney. Nephrectomy lasted for four hours and anesthesia was adequate throughout the surgery. Patient was comfortable throughout the intraoperative period and there were no major haemodynamic or respiratory changes. Postoperatively patient was shifted to ICU for monitoring. Postoperative analgesia was maintained with epidural infusion of 0.125% Bupivacaine + Inj. Fentanyl 2 µg/mL at the rate of 6 mL/h. On the second postoperative day, patient developed sudden breathlessness with pain in the right side of the chest and decrease in oxygen saturation. Clinically and radiologically it was diagnosed as pneumothorax and

was treated with immediate ICD insertion. Patient was continued to be monitored in the ICU and was shifted out of the ICU on the 10th postoperative day with no further complications.

Discussion

Nephrectomies are usually performed under general anesthesia alone or in combination with regional anesthesia because of the surgical position, duration of surgery.

Our patient was a known case of COPD with history of recurrent spontaneous pneumothorax. The most common cause of secondary spontaneous pneumothorax is chronic obstructive pulmonary disease, which accounts for approximately 70% of the cases.⁵ Once a second episode has occurred, there is a high likelihood of subsequent further episodes.⁶ Pneumothorax is a potentially dangerous problem, especially during general anesthesia, as positive pressure ventilation increases the risk of a tension pneumothorax.⁷ Our patient had three episodes of pneumothorax in the past which made him high risk for general anesthesia. Hence we decided to perform the surgeries under regional anesthesia alone. We decided to proceed with combined spinal-epidural anesthesia for the nephrectomy because the spinal anesthesia provided a faster onset of anesthesia safely up to T6-8 with good muscle relaxation and we could achieve the higher level and also further maintain anesthesia through the continuous epidural anesthesia.

In our patient, the intraoperative period was uneventful, but on the second postoperative day the patient developed spontaneous tension pneumothorax which was recognised and treated early. Such event could have happened intraoperatively more readily if general anesthesia with intermittent positive pressure ventilation was administered. The use of regional anesthesia in this patient avoided such events intraoperatively.

Conclusion

Position of the patient for the surgery, prolonged duration of surgery, and need for good relaxation make most anesthesiologists to choose general anesthesia with/without regional anesthesia for nephrectomies. In selected cases such as ours, where the benefits of regional anesthesia outweigh the advantages of general anesthesia, nephrectomies can be performed under regional anesthesia alone, after adequate patient counseling.

Conflicts of interest

The authors declare no conflicts of interest.

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