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CASE REPORT

UNCORRECTED PROOF

Laparotomic gastrostomy under aweake thoracic epidural anaesthesia: a prospering experience

Uyanık thorakal epidural anestezi altında laparotomik gastrostomi: Başarılı bir deneyim

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Summary

General anaesthesia is the first choice as an anaesthesia method particularly for abdominal operations. However, since neuromuscular blockade to be provided during general anaesthesia will increase atelectasis in a patient with pulmonary disease, it will also increase postoperative ventilator dependence. This need will be even more apparent in cases of chronic obstructive pulmonary disease (COPD) that pose a risk especially for postoperative complications. Thoracic epidural anaesthesia (TEA) is a better option for our patient with serious obstructive pulmonary diseases and stage 4 lung cancer as it provides sufficient anaesthesia and better postoperative care for laparotomic gastrostomy.

Keywords: Chronic obstuctive pulmoner disease; laparoscopic gastrostomy; lung cancer; throcal epidural anaesthesia.

Özet

Genel anestezi, özellikle batın operasyonları için ilk tercih edilen anestezi yöntemidir. Ancak akciğer hastalığı olan birinde, genel anestezi esnasında sağlanacak neuromusculer blokaj atelektaziyi artıracağından, postoperatif ventilatör bağımlılığını artıracaktır. Özellikle postoperatif komplikasyonlar için risk oluşturan kronik obstruktif akciğer hastalığı (COPD) olgularında bu ihtiyaç daha belirgin olacaktır. Thoracal epidural anaesthesia (TEA), üst abdominal operasyonlar için yeterli anestezi sağladığından, ciddi akciğer hastalığı ve evre 4 akciğer kanseri olan hastamız için en iyi seçenektir.

Anahtar sözcükler: Kronik obstruktif akciğer hastalığı; laparoskopik gastrostomi; akciğer kanseri; torakal epidural anestezi.

Introduction

In this case report we aimed to share with the readers our experience about a patient with stage IV lung cancer and COPD, who was predicted to develop postoperative pulmonary complications (PPCs) and to require mechanical ventilatory support after a peg operation. The PPCs were successfully averted by providing adequate anesthesia and analgesia using TEA in the patient.

Approximately 5% of patients undergoing noncardiac surgery experience serious pulmonary complications. Patients with COPD are 300% to 700% more sensitive to postoperative complications than those without. Particularly, procedures close to the diaphragma lead to atelectasis and weakness of respiratory muscles responsible for reducing lung volumes, further increasing the risk of complications.[1] Canet and et al.,[2] defined seven risk factors for postoperative pulmonary complications, including 1) lower preoperative SpO_2; 2) acute respiratory infection in the preceding months; 3) advanced age; 4) preoperative anemia; 5) upper abdominal or thoracic surgery; 6) operation duration longer than 2 hours; 7) emergency operations. As our patient had anemia and COPD, and he underwent a procedure close to diaphragma, he was also carrying a potential risk for PPCs.

Many factors lead to PPCs, including weakened mucociliary activity by anesthetic gases and tracheal intubation during general anesthesia; atelectasis caused by the inactivation of respiratory muscles during me-

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chanical ventilation and positive end expiratory pressure; and hypoxia and unplanned re-intubation due to the residual effect of muscle relaxing agents.[3]

A metaanalysis by Khetarpal et al., stressed that PPCs could be avoided by regional anesthesia in patients with COPD.[4]

Surgical trauma can impair respiratory functions by three mechanisms. First, functional impairment of respiratory muscles (intercostal, andominal muscles) following incision; second, limitation of respiratory function due to postoperative pain; and third, impaired diaphragmatic activity as a result of reduced phrenic motor neuron functions by visceral stimulation. In addition, individuals with severe lung disease use accessory respiratory muscles, e.g abdominal muscles. When these muscles are paralyzed by spinal or epidural block, they are unable to maintain spontaneous respiration.[5] This underlies the mechanism of dyspnea and tachypnea after TEA in our patient. Despite such risks of TEA that partcicularly affect patients with chronic lung disease, we preferred using TEA owing to its favorable properties, which include preservation of mucociliary activity; reduction of atelectasis incidence, opioid use and postoperative pain;[1] reduction of the risk of postopertaive ileus;[6] and allowing early mobilization.[7] Consani et al.,[8] used TEA and maintained block by hourly sultafentanyl infusion through the epidural catheter during a 3-hour subtotal gastrectomy operation in a patient with respiratory failure. A sucessful anesthesia maintenance both ensured a favourable operative outcome and averted all possible PPCs.

Cardiovascular causes constitute 30% of all preoperative mortality in low-risk persons and 60% in high-risk persons.[9] TEA reduces major determinants of myocardial oxygen demand and optimizes myocardial blood flow distribution that mediates coronary contraction.[10] A meta-analysis by Popping et al.,[11] showed a meaningful reduction in myocardial infarction (MI) with primary TEA in abdominal and thoracic procedures. To our view, although our patient was preoperatively expected to experience a reduction in myocardial oxygen supply as a result of anemia, reduced respiratory reserve, paralysis of accessory respiratory muscles by TEA, and a reduction of diaphragmatic function by a reflex surgical stimulus, this did not occur by virtue of favourable properties of TEA, including an improvement of myocardial blood supply by symptahetic blockage, maintaining cardiac contractility throughout the procedure, and lowering blood pressure.

Addition of bicarbonate to lidocaine increases unionized fraction of the latter, thus facilitating passage through neuronal membrane and accelerates the onset of block.[12] Lidocaine,bicarbonate-fentanyl combination has been used for abdominal operations in which the level of epidural block remained inadequate and thus had to be increased.[13] We also used the same combination to achieve an adequate level of anesthesia.

Surgeons desire a loose abdominal wall for abdominal operations. In our case, the surgeon stated that there was no difficulty related to the technique, and relaxation was sufficient to perform the operation. In conclusion, we eliminated PPCs by using TEA in a patient at risk of adverse events related to general anesthesia.

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