

CASE REPORT

REGIONAL ANESTHESIA

Regional anesthesia in a patient with multiple trauma, advanced age and multiple comorbidities

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Abstract

The higher incidence of comorbidities in advanced age causes difficulties in anesthesia management. When choosing the anesthesia technique in old aged patients, our target must be to avoid aggravating the existing systemic diseases and avoid disturbing the hemodynamics to ensure their rapid return to routine life. In this case report, we present our choice of infraclavicular nerve block accompanied with spinal anesthesia in a patient with advanced age and several comorbidities, who sustained multiple trauma. The surgery of the patient was successfully performed with minimal effects on the hemodynamics, and he was transferred to the clinic. We stress careful selection of the most appropriate anesthesia technique according to the existing state of the patient, and opting for appropriate nerve blocks even to the patients with respiratory problems.

Key words: Advanced age; Trauma; Spinal anesthesia; Infraclavicular block

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1. Introduction

With advanced age due to the increased life expectancy, we come across more and more geriatric patients. The perioperative risks this population are relatively higher as compared to the younger patients, and the appropriate selection of anesthesia technique has become much more important for these patients. The number of comorbidities in these patients is expected to be high, and problems involving multiple systems will commonly be encountered, especially the respiratory, cardiovascular, and neurological systems. During the periods when the existing diseases are decompensated, the risks associated with anesthesia

increases exponentially. When selecting the anesthesia technique for the surgical interventions to be performed in such patients, the primary concern must be to minimize the effects on the respiratory reserve and hemodynamic parameters.¹

There are many case reports about anesthesia approaches in the surgery of the geriatric population in the literature; however, the most appropriate anesthesia technique is usually selected based on multiple factors. In our case, we aimed to share our experience of choosing regional anesthesia in a multiple trauma patient with advanced age, who also had decompensated heart failure and severe respiratory distress.

2. Case report

A 78-year-old female patient presented to the hospital after a fall, and an operation was planned by the orthopedic surgery department due to fractures of right femur and right distal radius. In the preoperative evaluation, the patient was found to have diabetes mellitus, hypertension, coronary artery disease, chronic renal failure, congestive heart failure, and chronic obstructive pulmonary disease. The patient had been using multiple drugs. In the chest radiography of the patient, the aortic knuckle was prominent. Her nasal sinuses were blocked bilaterally, and there were rales in the basal areas on auscultation. Her labs showed serum creatinine value as 4.02 mg/dL, GFR 10, potassium 6 mmol/L, and the hemoglobin to be 10.7 gm/dL. In the preoperative echocardiography, ejection fraction (EF) was evaluated as 45% and sPAB was 50 mmHg. The patient underwent preoperative hemodialysis. In addition, a chest tube was inserted to drain the right thorax for pleural effusion. Follow-up was planned in the intensive care unit after the operation.

Following the necessary procedures, the patient was taken to the operating room with optimum preparation under emergency conditions. Monitors were attached. According to the findings of the initial monitoring, the blood pressure was 105/56 (80) mmHg, pulse was 154 /min, and oxygen saturation was 89%. It was decided that the most appropriate anesthesia technique for this patient was regional anesthesia under the existing conditions. The anticoagulant status of the patient was examined for regional anesthesia. It was found that 72 h had passed since the administration of the last dose of apixaban, low molecular weight heparin had been used within this period, and more than 12 h had passed after the last dose. The patient was administered 1 mg of midazolam and 25 µg of fentanyl as intravenous sedoanalgesia. Oxygen was given with a mask at 4 L/min. The left radial artery was catheterized, and invasive blood pressure and arterial blood gas monitoring was performed.

First of all, spinal anesthesia was administered as the fracture of the femur would be reduced. Inj. bupivacaine heavy 10 mg and fentanyl 20 µg were injected in the subarachnoid space with a 25G spinal needle at L3-L4 level. A sensory block was obtained at the T8 level. Thirty minutes before the completion

of the surgical operation for the femur fracture, infraclavicular block was given with 40 mg of bupivacaine and 160 mg of prilocaine in a total volume of 20 ml under USG guidance. No complications were observed during the procedure. The patient developed atrial fibrillation with rapid ventricular response was (160/min) in the intraoperative follow-up, so inj. esmolol 10 mg was administered intravenously, the heart rate was decreased to 130/min; the blood pressure was in the range of 90–110 / 40–60 mmHg. No intervention regarding heart rate was felt necessary, since there was no deterioration in the hemodynamics. A total of 2 L of 0.9% NaCl infusion was administered intraoperatively. The surgical operation was completed about 3 h later. The patient was transferred to the intensive care unit. She was discharged to the clinic and home after her condition became stable.

3. Discussion

Aging is a universal and progressive physiological condition characterized by degenerative changes in the structure and functional capacity of the organs and tissues. In general, geriatric patients are more sensitive to anesthetic agents; the effective doses of the drugs are reduced, and the duration of drug action is prolonged. During the perioperative period of geriatric patients, the overall aim is to accelerate the recovery and prevent functional decline.¹ Changes due to aging can normally be compensated; however, the limitation of this compensation is apparent in cases such as surgical stress.²

In our patient, a combination of two different regional anesthesia techniques was preferred as the most appropriate method for the surgical operation of fracture femur and distal radius, since she belonged to the geriatric population and had multiple comorbidities, considering that these morbidities could worsen after general anesthesia. Therefore, it was predicted to preserve the heart and lung functions of this patient and to decrease morbidity and mortality.³

In a study conducted by E Patorno et al.⁴ the mortality risk in patients who underwent surgical repair of hip fractures did not differ significantly according to the method of anesthesia. In addition, L Le-Wendling et al.⁵ demonstrated that there was no difference between hospitalization costs, rehospitalization rates,

postoperative morbidity, and mortality in geriatric patients undergoing regional and general anesthesia for hip fracture repair. In another study by MD. Neuman et al.,⁶ it was observed that the length of hospital stay was shorter in the regional anesthesia group; however, no significant difference was found regarding mortality.

As a result, the selection of the anesthesia technique varies according to the patient in the geriatric patient population. During the selection of the most appropriate anesthesia for the existing condition of the patient, minimizing the negative effects on the hemodynamics should be the primary concern. In patients with limited respiratory reserve, a peripheral nerve block may be preferred through a method that would not affect the phrenic nerve.

4. Conflict of interests

Nil declared by the authors

5. Authors' contribution

All of the authors contributed equally in the conduct of the case and preparation of the manuscript.

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