

SPINAL ANESTHESIA AND INTERSCALENE / SUPERFICIAL CERVICAL BLOCK IN MULTIPLE MYELOMA PATHOLOGICAL FRACTURE

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Abstract

Objective: The use of novel chemotherapeutic agents in the treatment of multiple myeloma (MM) has improved life expectancy and quality of life in these patients in the last decade. Therefore, more MM patients are treated for repeating pathological fractures.

Case Report: In our case spinal, interscalene and superficial cervical blocks were performed in a 61-year-old MM patient who will be operated due to tibial and humoral pathologic fractures and was at risk for general anesthesia due to cardiac and pulmonary problems.

Conclusion: In this report, we demonstrated that the use of regional anesthesia is a good option in order to minimize anesthesia related risk level in the presence of MM.

Keywords: multiple myeloma, regional anesthesia, spinal anesthesia

Introduction

Multiple myeloma (MM) is characterized by abnormal production of monoclonal immunoglobulins and neoplastic proliferation of the plasma cells (1). The most affected bones in a decreased order are vertebra, skull, pelvis, costa, scapula, humerus, and femur. The use of newer chemotherapeutic regimens for MM has increasing quality of life and survival rates in these patients. Therefore, anesthetists are encountering more commonly with orthopedic operations due to pathologic fractures in MM patients within the last decade (2). In this report, we present a case of patient with existing comorbidity and diagnosis of MM who underwent spinal, interscalene, and superficial cervical block for the operation due to pathologic tibial, and proximal humerus fracture, in order to minimize anesthesia related risk level.

Case Report

A 61-year-old ASA 3 patient weighed 75 kg, and followed up due to multiple myeloma developed pathologic right tibial and left proximal humerus fracture, and was scheduled for operation by the orthopedics clinic. Patient informed consent form was obtained for the case report. The patient had sporadic vertebra and various bone involvements. The patient had also cardiac involvement with an EF dropped down

to 25% in 2017, and EF was measured as 48% on the repeat echocardiography ordered after the treatment and before the operation. The patient had also pulmonary involvement and sporadic fibrotic lesions and minimal pleural effusion in the lower lobes. Admission oxygen saturation was 90% and regional anesthesia was planned because of poor general status and existing comorbidity of the patient.

Intravenous (iv) access was provided in the patient with an 18G cannula from the right hand dorsal side and with a 16G cannula from the right external jugular vein. The patients was monitored with ECG, non-invasive blood pressure and pulse oximeter. Oxygen support was provided. 1 mg iv midazolam and 50 mcg fentanyl were administered as premedication.

First, interscalene block and superficial cervical block were planned in the patients for the left proximal humerus fracture. While the patient was in right lateral decubitus position, between anterior and medial scalene muscles was visualized with in plane technique using 8-10 MHz linear probe in guidance of ultrasound (Esoate MyLab30, Florence, Italy). After the upper median and lower trunci were properly visualized between these muscles, a total of 20 mL local anesthetic agents was performed with monitoring the drug spread

as 10 mL 0.5% bupivacaine + 10 mL 2% prilocaine using a 80 mm 22G nerve stimulation needle, and monitoring the drug spread. In addition, since incision site might expand toward the clavicle, high-frequency probe was inserted in lateral to the neck so as the posterior margin of sternocleidomastoid muscle (SCM) will be in the middle of the screen as transverse nearly at C6 level, superficial cervical block was performed with 4 mL 0.5% bupivacaine + 4 mL 2% prilocaine diluted in 2 mL 0.9% normal saline. The surgical anesthesia was achieved 30 minutes after both brachial plexus blocks were performed by this way. The patient did not developed any complication related to local anesthetic agent and block application. We decided to perform spinal anesthesia for the right tibial fracture. Complete aception was provided paramedian approach technique at the level of L3-L4, spinal anesthesia was performed with 25 µg fentanyl and 2.5 mL 0.5% hyperbaric bupivacaine using a 27 G Whitacre needle. Sufficiency of the block was confirmed by loss of pain sensation at the level of T8 level and complete motor block in bilateral extremities. Blood pressure remained stable and no vasopressor was needed.

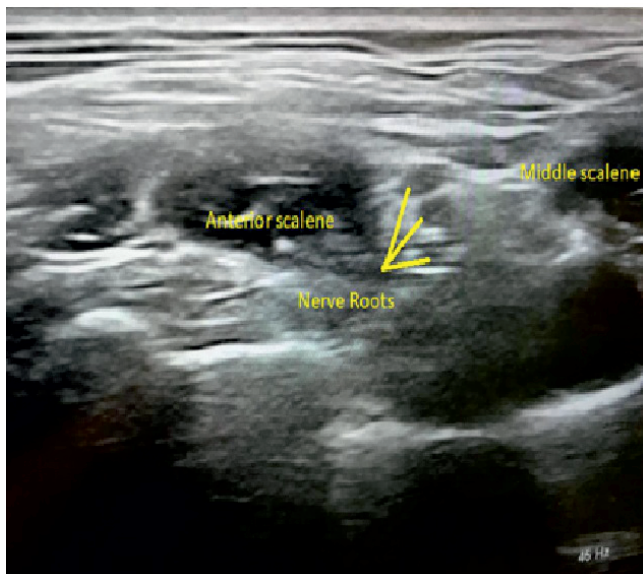


FIGURE 1.

The surgical operation was started. No complication occurred during the operation which lasted 4,5 hours. No additional sedation or conversion to general anesthesia was needed during the surgery. The patient had no pain in both right leg and left arm at the end of the operation. No additional analgesics were given. The patient was observed for 30 minutes and then referred

to the orthopedic clinic service. In repeat evaluations of the patient at the postoperative hours 2, 4, 24, and 48, the patient had no pain, and the motor function returned 6 hour after the operation in the lower extremity, and 8 hours after the operation in the upper extremity. The patient reported maximum pain as VAS 2 and required no opioids.

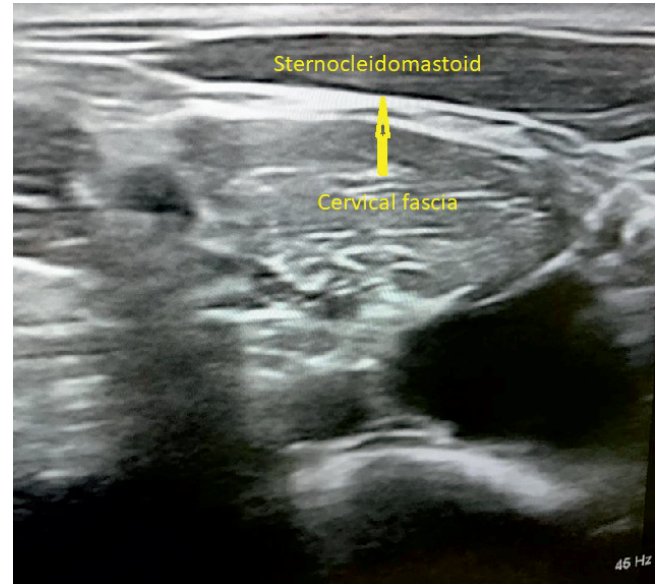


FIGURE 2.

Discussion

Multiple myeloma is characterized by proliferation of the plasma cells. These cells produce paraproteins, usually IgG, and also IgA and rarely IgD. Paraproteinemia is associated with the urinary excretion of the light chains (κ or λ) that are known as Bence Jones proteins. The disease is rarely manifest in reproductive age, because the median age of diagnosis is 61 years, and only 2% of patients diagnosed with multiple myeloma are under 45 years old. The most typical musculoskeletal system symptoms include bone pain due to the lytic lesions in the skeleton, pathologic fractures and cord compression due to the extraosseous spreading of the tumor (3). Humoral immunity is influenced by increased risk of infections caused by hypogammaglobulinemia and neutropenia. Amyloid deposition seen in 15% of the patients may lead to macroglossia, capillary fragility, infiltrative or restrictive cardiomyopathy (4).

Renal failure usually manifests with the damage to the renal tubules by hypercalcemia as a result of the free light chain and osteolysis. Renal failure is of poor

prognosis in these patients with higher mortality rate. Prevention of renal dysfunction by the anesthetist is important since these patients are at increased risk for acute renal failure (ARF) (5). In our patient also, the regional anesthesia we performed for prevention of renal dysfunction provided advantage in terms of both avoiding the drug burden by general anesthesia, and avoiding the use of NSAIDs for postoperative analgesia. Central neuraxial and regional nerve blocks are not contraindicated in MM patients. There are several reports of successful management regarding cesarean section under central neural block, and lower extremity surgeries under regional nerve blocks (6). Cancer patients are prone to thromboembolic events, but they may also have an abnormal platelet function. Immunosuppressed patients are at risk for neuraxial infection, but regional techniques are helpful in reduction of stress response against surgery, and protection of immunity function (7). Considering general anesthesia, possible difficulty in intubation should be particularly taken into account because of axial spine instability and macroglossia. Pharmacokinetics of anesthetic drugs may not be estimable because of the changed plasma albumin / globulin ratio (1). Irrespective of the technique preferred, insertion of the patient carefully on the operating table is vital. It is also important to provide sufficient hydration in order to prevent precipitation and kidney failure from hyperviscosity syndrome. Patients with cryoglobulinemia require a careful body temperature control in order to prevent accumulation of immune complexes followed by inflammatory vasculitis (8).

We performed spinal anesthesia with paramedian approach technique for tibial fracture in order to eliminate the postoperative need for opioids and NSAIDs, provide relieve of intraoperative and postoperative pain, and because of highly poor general status of our patient, and existing cardiac, pulmonary, and renal problems.

Peripheral nerve blocks are easily applied in many surgical procedures involving the upper and lower extremities. In the cases where peripheral nerve blocks are performed; the incidences of deep vein thrombosis, pulmonary embolism, the need for transfusion, pneumonia, respiratory depression, myocardial infarction, and renal failure decreased (9). Peripheral nerve blocks only minimally affects hemodynamics, and

are possibly the best choice in high risk patient a slight decrease in hemodynamic response (10).

In our case, regional block was applied instead of general anesthesia, because although renal function tests of our MM patients were not yet negative, the patient was under risk, and had heart failure and respiratory problems. For this reason, we performed interscalene block and superficial cervical block in our patient for proximal humerus and clavicular fracture.

In conclusion; anesthetists should choose the most suitable patient management considering general status and comorbidities of the patient in order to minimize possibility of the complications at high-risk patients.

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