

Case Report

Management of 57 year old morbidly obese female with multiple comorbidities with proximal humerus fracture - interscalene block: A case report

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ABSTRACT:

We present a case of 57 year old female, morbidly obese female patient with proximal humerus fracture posted for open reduction and internal fixation. She was a known case of Diabetes mellitus, hypertension, chronic kidney disease on thrice weekly hemodialysis and on home oxygen therapy. She had the fracture on the same side of AV fistula. Her BMI was 42.5 and she was not able to lie down supine. She underwent one cycle of hemodialysis the previous night. After shifting to operation theatre, 18G intravenous cannula was secured in other limb. We positioned her in head up position with an angle of 45° and bolsters under her knees, continued oxygen through face mask at 5L/min. We anesthetized her using ultrasound and peripheral nerve stimulator guided interscalene block with 20ml of 0.5% bupivacaine. We checked for motor blockade after 20 minutes of giving the block. Procedure went uneventful and she was shifted to icu in head up position only, on the bed. This case highlights the practical difficulties like positioning, securing an iv cannula, difficult airway that we encounter with obese individual with multiple comorbidities. So we need to weigh up the risks and benefits and decide the mode of anesthesia, so as to avoid the complications.

INTRODUCTION

Obesity has become one of the major health risk factors in the last 20years. Morbid obesity is often related to multiple diseases like hypertension, diabetes mellitus, hypothyroidism, obstructive sleep apnea, metabolic syndrome and others ¹. So, one has to consider several issues when treating such patients like uncontrolled blood pressure, uncontrolled sugars, anticipated difficult airway. Moreover, these patients are also prone for postoperative complications like respiratory infections, cardiac failure. Especially patients with history of obstructive sleep apnea, which is often undiagnosed in more than 20% of obese individuals, are at risk of postoperative cardiorespiratory failure. Managing postoperative analgesia for obese individuals also is a challenge to an anesthesiologist as using opioids can increase the risk of respiratory failure in the postoperative period^{2,3}. Inadequate analgesia along with transient episodes of hypoxia, can trigger an inflammatory cascade, which can increase the risk of thromboembolic events⁴. Another important issue that we need to consider while anesthetizing an obese individual is the anticipated difficult airway and its incidence is more than in the non-obese individuals⁴. So, wherever possible, regional anesthesia is preferred over general anesthesia as it can also provide effective postoperative analgesia^{5,6}.

CASE REPORT:

A 57 year old female was admitted to our hospital with history of accidental fall and sustained injury to right shoulder. She was posted for open reduction and internal fixation of the proximal humerus. Her height was 155cm and weight was 102kgs, with BMI of 42.5. she was on oral metformin 500mg two times daily, oral glimepiride 1mg two times daily for diabetes, tablet amlodipine + telmisartan (5+40mg), and cilnidipine 10mg two times daily for hypertension, tablet levothyroxine 125 µg for hypothyroid and she was on thrice weekly hemodialysis for chronic kidney disease. She was on home oxygen therapy because of her cardiac failure. She was able to do her daily activities like bathing, eating. She was extremely anxious and apprehensive. We saw her in the pre anesthetic clinic and explained her and her daughter about the risks related to her comorbidities and the proposed surgery. Our anesthetic plan was regional anesthesia, we explained her about the same and written informed consent was obtained. We advised her to skip the morning dose of oral hypoglycemics and to continue all other medications on the day of surgery and to get hemodialysis done the previous night. We asked for serum electrolytes and fasting blood sugars on the morning of surgery. Her preoperative hemoglobin was 10gm/dL, hematocrit of 32, INR of 1.3, aPTT of 33.8

seconds. Her electrolytes were normal on the morning of surgery. Echocardiogram showed global hypokinesia with ejection fraction of 43% and moderate left ventricular diastolic dysfunction. Airway assessment was done, Mallampatti score was 3, thyromental distance was 3cm.

On the day of surgery, after shifting to the operation theatre, 18G intravenous cannula was secured on the left hand, connected to monitors – 5 electrode Electrocardiogram, non-invasive blood pressure and saturation probe. She was premedicated with midazolam 1mg iv. Humerus fracture was on the same side of AV fistula, so adequate padding was done to the fistula site and covered with sterile cloth. She was positioned in head up position with an angle of 45°, placed bolsters under her knees and continued oxygen through face mask at 5L/min. In the same position, her neck was cleaned with betadine and under sterile aseptic precautions, a high frequency linear probe 13-6MHz was placed in the transverse plane between the anterior and middle scalene muscles. A 50mm nerve block needle was introduced in plane and a nerve stimulator with a setting of a 2mA current and 2Hz frequency. As the plexus was approached, movement of the shoulder was observed and the current was gradually reduced to 0.5mA. then the 20mL of 0.5% bupivacaine was injected perineurally after intermittent negative aspiration for blood. We checked for motor blockade after 20 minutes of giving the block. After ensuring the adequate motor blockade, surgeons proceeded with the surgery of open reduction and internal fixation. 300mL of normal saline was given intraoperatively. Procedure got completed in 2hours and then she was shifted to the postoperative icu in head up position on the bed with oxygen support of 5L/min through facemask.

DISCUSSION:

Obesity prevalence has increased over the last 20years and they are prone for various cardiorespiratory, metabolic diseases. Perioperative management of an obese individual is always a challenge to an anesthesiologist. Due to increased abdominal pressure, functional residual capacity (FRC) decreases, thereby increasing the chances of basal atelectasis, leading to high risk of postoperative respiratory failure⁷. Obese individuals also prone for obstructive sleep apnea, apart from diabetes, hypertension,

which can result in pulmonary hypertension and cor pulmonale.

Furthermore, opioid usage in the postoperative period for analgesia can accentuate the respiratory depression. So, nerve blocks are preferred mode of analgesia in the obese individuals. But there are technical difficulties in performing regional anesthetic techniques as well in obese individuals. Positioning, identifying the anatomical structures are also difficult in such patients. It requires well trained personnel with expertise to do nerve blocks in obese individuals. Combining two techniques like using both ultrasound and peripheral nerve stimulator increases the success rate of the block and help in avoiding unilateral diaphragmatic paralysis due to phrenic nerve blockade, which can further compromise the respiratory drive. That is why, we used both ultrasound and peripheral nerve stimulator guided interscalene block and it was given by an experienced anesthesiologist, which definitely made the block successful. Combination technique helped us in reducing the volume of local anesthetic and depositing the drug precisely at the desired place. Regional anesthesia is the preferred technique in obese individuals as the incidence of difficult airway is higher among them. That's why, we used interscalene block for proximal humerus fracture, which helped us to use less opioid in the postoperative period. Our patient was managed with oral paracetamol from the first postoperative day. She underwent hemodialysis on the first operative day and the serum electrolytes values were normal. she was extremely satisfied with our analgesia management and she was discharged on the third postoperative day.

CONCLUSION:

Perioperative management of obese patients are always challenging and one has to weigh up the risk and benefits before deciding the anesthesia technique. Regional anesthesia is preferred wherever possible and acts as a safer alternative for general anesthesia. But one should always anticipate difficult airway and should be prepared to give general anesthesia.

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