
Noncardiac surgery in two severe aortic stenosis patients: General or epidural anesthesia?

Sir,

Anesthesia in severe aortic stenosis (SAS) can result in rapid clinical deterioration and patient mortality. The current American College of Cardiology (ACC) guidelines recommend aortic valve surgery^[1] before elective noncardiac surgery in symptomatic SAS patients. In some clinical circumstances, aortic valve surgery cannot be performed due to high surgical risk or patient refuses aortic valve surgery. In such situation, it is important to determine which anesthesia technique has the lowest risk for these patients for undergoing noncardiac surgery. Here, we discuss anesthetic management of series of two SAS patients coming for emergency noncardiac surgery.

A 92-year-old male diagnosed with SAS with atrial fibrillation 14 years back was posted for emergency surgery for obstructed inguinal hernia at our institute. He was taking tablet acitrom 1 mg, digoxin 0.25 mg, atorvastatin 40 mg, and lasilactone 20 mg. He had pulse rate of 130/min irregularly irregular, blood pressure 150/70 mmHg, respiratory rate 26/min, breath holding time 5 seconds, and room air saturation of 85%–88%. His preoperative

blood investigations were normal except for INR of 2.1, blood urea – 78 mg/dl, and serum creatinine – 1.4 mg/dl. Electrocardiography showed atrial fibrillation with heart rate of 120/min. Chest and abdomen roentgenogram showed the presence of thoracolumbar scoliosis with hyperinflated lungs. His echocardiography showed calcified aortic valve with peak and mean gradient of 110 mmHg and 52 mmHg, severe pulmonary artery hypertension leading to severe tricuspid regurgitation, moderate mitral stenosis, and mitral regurgitation, and ejection fraction of 55%–60%. In operation theater, after establishing electrocardiography, invasive arterial, pulse oximetry, and capnography, general anesthesia was administered using injection fentanyl 60 µg, propofol 30 mg, and atracurium 15 mg. The mean arterial pressure was maintained above 65 mmHg using titrated dose of phenylephrine between 0.3–0.6 µg/kg/min. The intraoperative vitals were stable [Figure 1], and completion echocardiography showed good biventricular function with inferior vena cava (IVC) diameter of 1.8 cm showing <50% collapsibility. The patient was extubated and shifted to postanesthesia care unit with phenylephrine infusion

tapered at the end of surgery. After monitoring for the next 2 days, the patient was subsequently discharged home in hemodynamically stable condition.

A 32-year-old female primigravida at 19 weeks of gestation, a known case of chronic hypertension, came to our institute with complaints of breathlessness, palpitations, and syncopal attacks. She had height of 125 cm and weighed 42 kg. She was presently taking tablet dytor and labetalol. On examination, her pulse rate was 80/min, blood pressure 110/70 mmHg, and respiratory rate 12/min. Routine blood investigations were normal except for urea which was 148 mg/dl and creatinine 4.8 mg/dl. Her echocardiography showed bicuspid aortic valve with peak and mean gradient of 118 mmHg and 61 mmHg, severe aortic regurgitation with aortic root dilatation, and ejection fraction was 55%–60%. Her chest roentgenogram showed the presence of thoracic scoliosis [Figure 2]. Pulmonary function tests showed the presence of severe restrictive lung disease. Abdominal ultrasound revealed bilateral parenchymal thickening in both kidneys which was diagnosed as chronic kidney disease Stage IV. It was decided to perform surgical abortion in operation theater as it could be performed in a planned manner in the presence of adequate monitoring. Her baseline heart rate was 70 beats/min, blood pressure of 96/60 mmHg, and room air saturation of 97%. In operating room, after establishing electrocardiography, invasive blood pressure, central venous pressure, pulse oximeter, and capnography, general anesthesia was administered with fentanyl 60 µg, propofol 30 mg, and atracurium 20 mg. After induction, phenylephrine infusion started at 0.1–0.3 µg/kg/min to maintain mean arterial pressure above 65 mmHg. Suction curettage proceeded uneventfully with phenylephrine being tapered off at end. The patient was extubated and shifted to recovery room. She was monitored for 2 days in high dependency unit and subsequently discharged.

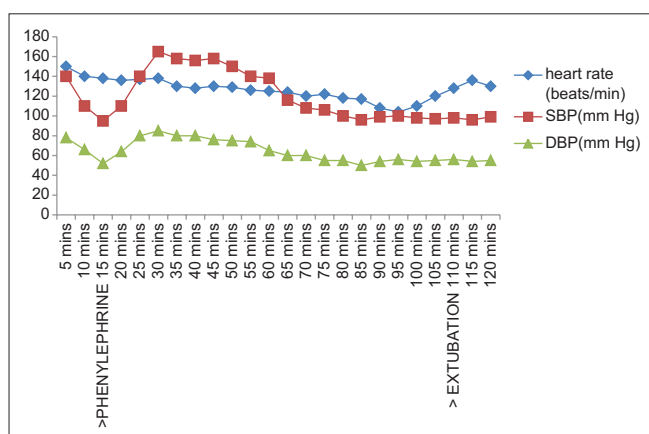


Figure 1: The intraoperative hemodynamic parameters of our first patient

There is no consensus on which anesthetic technique is safer for noncardiac surgery in SAS patients. In elderly cardiac patient for obstructed inguinal hernia surgery, one may prefer regional anesthesia. Since patients with SAS have limited stroke volume, any major reduction in systemic vascular resistance may result in sudden fall in perfusion pressure; therefore, spinal anesthesia in patient with aortic stenosis (AS) should be avoided. Although various studies have described the use of graded epidural anesthesia in SAS patients,^[2] administration of regional anesthesia at INR > 1.5 has been associated with increased risk of vertebral canal hematoma.^[3] Therefore, in patients with deranged coagulogram, decision for regional anesthesia should be omitted.

Administration of regional anesthesia in short-statured patients has been associated with variable levels of block height. Although successful graded epidural anesthesia has been reported in short-statured patients for cesarean section,^[4] two cases have reported high levels of block.^[5] Nevertheless, administration of regional anesthesia in the presence of short stature and scoliosis can lead to variable level of block height which is not desirable in SAS patients.

Very few studies have compared general versus epidural anesthesia for noncardiac surgery in SAS patients. In two studies comparing the mortality rate between general and epidural anesthesia for noncardiac surgery in SAS patients, they found a mortality rate of <5%.^[6,7] In both these studies, authors have proven that SAS patients though not a candidate for cardiac surgery can undergo emergent noncardiac surgery with acceptable risk and found that severity of AS and emergency surgery are most important predictors of major adverse cardiovascular events following noncardiac surgery. Thus, we can say that the question whether to give general or epidural depends totally on

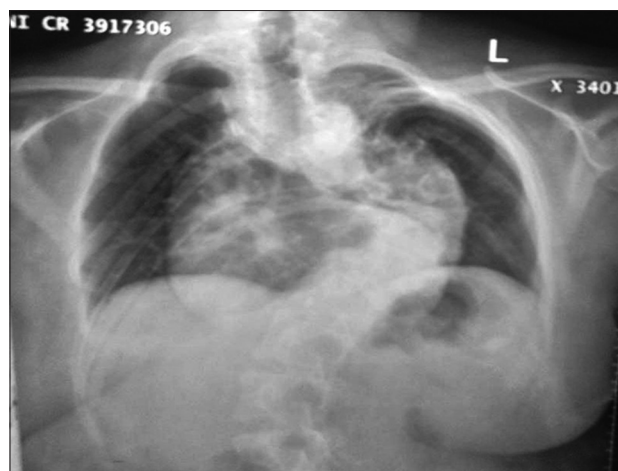


Figure 2: The chest roentgenogram of our second patient

anesthesiologist's discretion who takes into consideration patient's perioperative condition, severity of AS, type of surgery, and previous experience.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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