

## Perianesthetic management of a patient with hypertrophic obstructive cardiomyopathy (HOCM) with left ventricular outflow tract gradient of 150 mmHg undergoing Whipple's surgery

Dear Editor,

Left ventricular outflow tract (LVOT) obstruction is a feature of Hypertrophic obstructive cardiomyopathy (HOCM) and can cause circulatory collapse with increased pressure gradient (PG) across it which occurs during anesthesia and major surgery.<sup>[1]</sup> Most reported cases are of cesarean section.<sup>[2,3]</sup> Here, we describe a non-parturient patient.

An 65-year-old male, weighing 70 kg and a diagnosed case of HOCM was posted for Whipple's surgery. He was asymptomatic with tablet metoprolol 50 mg once a day. Pre-anesthetic evaluation revealed a heart rate of 58 beats/min, blood pressure (BP) of 114/74 mmHg, non-radiating grade 2 ejection systolic murmur and METs >4. Preoperative echocardiography revealed provokable LVOT PG of 150 mmHg and normal left ventricular function. Electrocardiogram showed normal sinus rhythm with left bundle branch block pattern. Rest of the investigations were within normal limits. The patient was pre-medicated with oral tablets of diazepam 10 mg and ranitidine 150 mg the previous night of surgery. In the operating room after securing two 16G intravenous cannulas, 5-lead ECG, NIBP, SpO<sub>2</sub>, and BIS monitors were attached. An epidural catheter was placed in L2–L3 interspace in sitting position and left radial artery and right internal jugular vein were cannulated. Anesthesia was induced with fentanyl 3 mcg/kg, thiopentone 3 mg/kg and endotracheal intubation done after vecuronium 0.1 mg/kg and vocal cord spray with 10% lidocaine. Intraoperative BIS was maintained between 40 and 60. Anesthesia was maintained with O<sub>2</sub> in air (50:50) an isoflurane (0.2%–0.5%). Epidural infusion of 0.0625% bupivacaine with 4 mcg/ml fentanyl at 8 ml/h was given. Total duration of surgery was 8 h. Blood loss of 1.6 L was adequately replaced. Intraoperative vitals remained within normal limits. At the end of the surgery, neuromuscular blockade was reversed with neostigmine and glycopyrrolate, and trachea was extubated. Postoperatively,

epidural infusion of 0.0625% bupivacaine with 4 ug/ml fentanyl at 6 ml/h was given for 2 days followed by boluses of epidural morphine 3 mg in normal saline for the next 4 days. The patient was pain-free and was discharged on the 10<sup>th</sup> postoperative day.

Anesthesia goals in patients of HOCM include prevention of increase in LVOT gradient and strict vigilance on fluid management.<sup>[1]</sup> The present patient had severe LVOT obstruction (>30 mmHg).<sup>[1]</sup> Further increase was prevented by preventing decrease of systemic vascular resistance (SVR), adequate fluid therapy, and prevention of myocardial depression with slow titration of thiopentone (Etomidate was not available), vecuronium (no histamine release), 10% lidocaine spray of vocal cords, isoflurane titration with BIS, and epidural infusions at low concentration.<sup>[4]</sup> Epidural catheter was placed in sitting position to prevent ventricular tachycardia, in lateral flexed position.<sup>[5]</sup> Nitrous oxide was avoided. Intraventricular volume was maintained to prevent heart failure.<sup>[1,6]</sup> Slightly lower heart rate was favored to provide adequate left ventricle filling time.<sup>[1,6]</sup> Average LVOT gradient reported was 63 mmHg in non parturients. A high LVOT gradient of 150 mmHg has not been reported before. We conclude that prevention of fall in SVR and increase in heart rate are essential in favorable outcome in HOCM patients with high LVOT PG undergoing major surgery.

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### Conflicts of interest

There are no conflicts of interest.

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