

## Dexmedetomidine in upper gastrointestinal endoscopy of a patient with ejection fraction 25%

Sir,

A 65-year-old female presented with anorexia, vomiting, and yellowish discoloration of skin for 3 months. She was diagnosed as extrahepatic cholangiocarcinoma with extrahepatic biliary obstruction type 3 and was advised surgical resection of tumor. On preoperative examination, she had history of dyspnea on mild exertion (New York Heart Association III), her electrocardiogram (ECG) showed left bundle branch block. Chest X-ray revealed cardiomegaly. Transthoracic echocardiography showed dilated left ventricle, global hypokinesia, left ventricular ejection fraction (LVEF) 25%, moderate pulmonary artery hypertension. She was started on oral digoxin 2.5 mg OD, aspirin 150 mg OD. Patient was explained high risk for surgery and anesthesia. She refused for surgery owing to increased cardiac risk. She was advised endoscopic placement of stents to drain the biliary system for symptomatic relief. Endoscopic stent placement in an awake patient is an unpleasant experience because of gag reflex, retching and nausea. Monitored

anesthesia care with light sedation is required for patient and gastroenterologist's comfort. She was induced with 1 ug/kg dexmedetomidine over 20 min and then infusion was titrated between 0.2 and 0.5 ug/kg/h to keep blood pressure and heart rate within 10% of baseline. Her mean heart rate during procedure was  $74 \pm 10$  and mean blood pressure was  $80 \pm 15$  mmHg. The procedure lasted for 40 min. Her ECG remained normal, no arrhythmia was observed. Ramsay sedation score<sup>[1]</sup> achieved was 5. She was oxygenated throughout the procedure until recovery from sedation (Ramsay score 2) by face mask. Oxygen saturation was never below 98%. The recovery time was 30 min.

Surgical resection with curative intent is the treatment of choice for extrahepatic cholangiocarcinoma, but comorbidities including cardiovascular and the patient's performance status have to be taken into consideration.<sup>[2]</sup> The main cause of morbidity is cholestasis and its complications, including cholangitis and pruritus. Endoscopic restoration of biliary drainage is generally preferred.<sup>[2]</sup> Our patient also had

dilated cardiomyopathy with poor ejection fraction (LVEF 25%). These patients have increased peri-operative morbidity and mortality.<sup>[3]</sup> They have increased predisposition to arrhythmia during periods of stress.<sup>[3]</sup> Gastrointestinal endoscopic procedures per say can lead to periprocedure arrhythmias. Atrial and ventricular ectopic beats, atrial fibrillation, supraventricular tachycardia, ventricular tachycardia and even cardiac arrest due to ventricular fibrillation have been described.<sup>[4]</sup> Myocardial infarction, causally related to the procedure has also been reported.<sup>[4]</sup>

A combination of intravenous midazolam and fentanyl with or without propofol infusion is usually used for sedating the patients for endoscopy. Both midazolam and propofol are myocardial depressants. These with opioids, in semiprone position, could have caused respiratory depression, which could have been detrimental in this patient. Dexmedetomidine is a highly selective alpha 2a-adrenoreceptor agonist with sedative, analgesic and antisialagog effects. Dexmedetomidine offers hemodynamic stability, has minimal effects on respiration, diminishes sympathetic response to stress and has a potential for cardioprotective effects against myocardial ischemia. Complications such as hypotension and bradycardia have been reported but when carefully titrated it provides efficient sedation and analgesia without causing hemodynamic instability.<sup>[5]</sup> Dexmedetomidine has been reported in successful management of peri-operative atrial and junction tachyarrhythmias,<sup>[6]</sup> but also reported to be a cause of peri-operative ventricular extrasystole.<sup>[7]</sup> Intravenous dexmedetomidine alone can be used for successful procedural sedation in a cardiovascularly compromised individual without any adverse events.

Divya Srivastava, Sohan Lal Solanki<sup>1</sup>, Prabhat Kumar Singh

Department of Anesthesiology, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, Uttar Pradesh, <sup>1</sup>Department of Anesthesiology, Critical Care and Pain, Tata Memorial Hospital, Mumbai, Maharashtra, India

#### Address for correspondence:

Dr. Divya Srivastava,  
D2/537, Sector F, Jankipuram, Lucknow,  
Uttar Pradesh, India.  
E-mail: dr.divyshi@gmail.com

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