
Anesthetic challenges for pleuro-pericardial window

Sir,

A 65-year-old female patient receiving chemotherapy for stage 4 lung carcinoma presented to us with respiratory distress. Two-dimensional echocardiography showed massive pericardial effusion [Figure 1], with collapsed ventricles [Video 1]. Pericardial tap revealed malignant cells in aspirate. She had undergone pericardiocentesis twice in last 2 months for symptomatic relief of respiratory distress. Due

to recurrent nature of effusion, pleuro-pericardial window procedure was planned.

After obtaining informed written consent, patient was shifted in the operation theater. Multichannel vital sign monitor was connected to examine heart rate, respiratory rate, oxygen saturation and end-tidal carbon dioxide. For the measurement of invasive blood pressure, and central

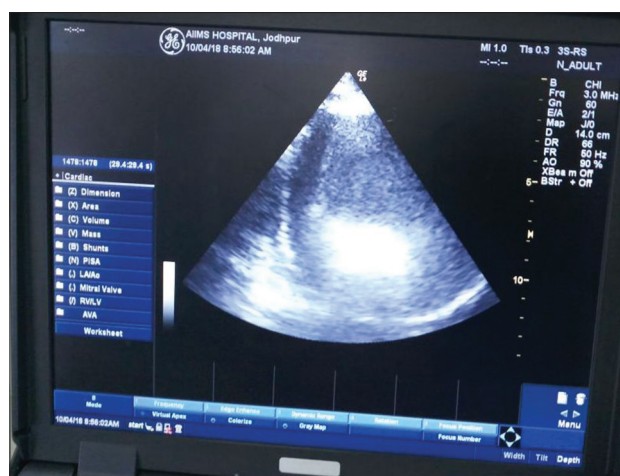


Figure 1: Two-dimensional echocardiography showing massive pericardial effusion

venous pressure, a radial artery and a central venous catheter were also inserted. Cross-matched blood was arranged, infusions of inotropic drugs were prepared, and defibrillator was kept ready. Patient was induced with 10-mg injection of etomidate, 60-mg injection of ketamine, and 100- μ g injection of fentanyl intravenously. Mean blood pressure dropped to 48 mmHg, which was managed by infusion of 500-ml normal saline. After confirming adequate mask ventilation, 35-mg injection of atracurium was administered intravenously, followed by endotracheal intubation. Anesthesia was maintained with air, oxygen, and sevoflurane mixture. Following completion of surgery, patient was extubated in operation theater, and after 1 h of observation in postoperative intensive care unit, she was shifted to ward. The whole procedure remained uneventful except for hypotension during induction.

Pericardial effusions associated with malignancy usually develop slowly, and when the volume of fluid exceeds the limit of stretch of pericardial membrane, it results in cardiac tamponade. Though cardiac tamponade may be relieved by pericardiocentesis, malignant pericardial effusions being chronic and recurrent in nature are best managed by pericardial window.^[1] In this procedure, a passage is created between pericardial sac and adjacent space, usually the pleural cavity for long-term drainage of pericardial fluid. Standard approaches for pericardial window include subxiphoid approach, and right and left anterior thoracotomy.^[2] We approached through left anterior thorax.

In cardiac tamponade, impaired ventricular diastolic filling leading to decrease in stroke volume is compensated by

increase in heart rate, contractility, and systemic vascular resistance. Anesthetic considerations in these patients focus on augmentation of preload and maintenance of afterload, contractility and heart rate, and use of low positive end expiratory pressure (PEEP) during positive pressure ventilation. Optimal anesthetic plan in pericardial effusion varies with patient's clinical condition, especially severity of effusion. Local anesthesia is preferred in cardiac tamponade, as most of the general anesthetic agents cause myocardial depression and systemic vasodilation. During general anesthesia, positive pressure ventilation further aggravates the situation by the decreasing venous return.^[3] In severe cases, immediate percutaneous drainage in awake state may be required prior to commencement of general anesthesia. For intravenous induction, ketamine and etomidate are preferred, as former supports the heart rate, contractility, and systemic vascular tone, and latter has minimal effects on blood pressure.^[4] In our case, combination of ketamine and etomidate resulted in hypotension, probably an effect of positive pressure ventilation.

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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