Introduction

Pericardial decompression syndrome (PDS) is a rare complication of pericardiocentesis associated with a high morbidity and a high mortality rate. The precise pathophysiological mechanism underlying PDS is not fully understood, and three hypotheses are postulated in literature; 1) the hemodynamic hypothesis, 2) the ischemic hypothesis and 3) the sympathetic overdrive hypothesis.

Case presentation

A 58-year-old female, with a past medical history of lung adenocarcinoma stage IV, diagnosed 15 months prior to presentation and treated with Osimertinib, who presented with a 3-day history of shortness of breath and fatigue. She was tachycardic (110 bpm), hypotensive (95/65 mmHg) with jugular venous distention. EKG showed sinus tachycardia, low QRS voltage, upsloping ST-segment elevation in the inferolateral leads, and PR segment depression. A focused cardiac ultrasound revealed a large pericardial circumferential effusion with prominent diastolic collapse of the right ventricle (RV). She underwent an emergent pericardiocentesis of 700 ml bloody fluid under fluoroscopic guidance, and pericardial drain was left in place for continuous drainage. Her hemodynamic improved briefly but within hours she became hypotensive mandating vasopressor support, intubation, and mechanical ventilation.

A transthoracic echocardiogram (TTE) showed no evidence of fluid reaccumulation, however, it showed severely dilated and hypocontractile RV with basal hypokinesia sparing the apex suggestive of McConnell’s sign (Figure 1). Urgent CT pulmonary angiography demonstrated subsegmental bilateral lower lobe pulmonary emboli that do not explain the degree of RV failure and hemodynamic compromise. Over the next 24 hours, the patient’s condition deteriorated, and she expired.

Discussion

The patient’s presentation is consistent with PDS. Its true incidence is unknown; however, several surgical series reported an incidence between 4% and 11%. The precise pathophysiological mechanism underlying PDS is not fully understood. Malignancy-related effusions and female gender are associated with increased risk of PDS. Most commonly it presents with cardiogenic shock following pericardiocentesis. Diagnosis of PDS should be done only after excluding other causes of shock and treatment is supportive. It carries a high mortality rate of up to 24%. To prevent its occurrence, many authors suggest the removal of the smallest amount of pericardial fluid that leads to the resolution of cardiac tamponade physiology followed by prolonged pericardial drainage through an indwelling pericardial catheter.

Figure 1: Apical view showing marked dilatation of the right ventricle and right atrium. The right ventricle systolic function was markedly reduced. There was evidence of McConnell’s sign.

References