An unusual cause of cardiac paradox

Faizel Osman*, J. Ian Geh, Michael J. Griffith

Department of Cardiology, University Hospital Birmingham NHS Trust, Queen Elizabeth Hospital, Birmingham B15 2TH, UK

Received 27 February 2006; received in revised form 6 May 2006; accepted 13 May 2006
Available online 19 June 2006

KEYWORDS
Cardiac paradox;
Intra-cardiac mass;
Echocardiography

A 67-year-old lady presented with a 2-week history of increasing dyspnea. She had a past history of metastatic renal cell carcinoma treated by radical nephrectomy 3 months previously. On examination she was dyspnoeic at rest, hypotensive (90/50 mmHg) and was noted to have a significant pulsus paradoxus with a drop in systolic pressure of 20 mmHg on inspiration. Her venous pressure was only mildly elevated and she had a soft systolic murmur. Her admission 12-lead ECG revealed sinus rhythm and chest X-ray showed mild cardiomegaly with no evidence of pulmonary oedema. A non-gated CT pulmonary angiogram excluded pulmonary emboli but revealed a moderate pericardial effusion with a tumour arising from the inter-ventricular septum lying within both ventricles. A putative diagnosis of cardiac tamponade was made and an urgent transthoracic echocardiogram showed a pericardial effusion, but no features of cardiac tamponade. The left ventricular tumour was seen to be mobile and causing intermittent obstruction of the left ventricular outflow tract with respiration (Figs. 1–2);

Figure 1 Transthoracic echocardiogram (para-ternal long axis view) showing the tumour arising from the inter-ventricular septum and obstructing flow in both ventricular outflow tracts.
the right ventricular tumour was also mobile and moved intermittently through the right ventricular outflow tract (see moving image). These features accounted for the cardiac paradox noted on examination. The patient was not a candidate for cardiac surgery and, therefore, a single fraction of palliative radiotherapy to the heart was offered in the hope of reducing the tumour size and relieving her symptoms. Unfortunately, she had a cardiac arrest immediately after radiotherapy treatment and was found in electromechanical dissociation. Cardiopulmonary resuscitation was unsuccessful.

Cardiac paradox is commonly seen in patients with tamponade but unusual causes of paradox, such as intra-cardiac masses, need to be considered especially in patients with metastatic neoplastic disorders.

Supplementary information

A moving image, part of Figs. 1 and 2, can be downloaded at doi: 10.1016/j.euje.2006.05.002.