- 11 **Yiu S**, Enriquez-Sarano M, Tribouilloy C, *et al*. Determinants of the degree of functional mitral regurgitation in patients with systolic left ventricular dysfunction. *Circulation* 2000;**102**:1400–6.
- 12 **Breithardt O**, Sinha A, Schwammenthal E, *et al*. Acute effects of cardiac resynchronization therapy on functional mitral regurgitation in advanced systolic heart failure. *J Am Coll Cardiol* 2003;**41**:765–70.
- 13 **Benge W**, Litchfield RL, Marcus ML. Exercise capacity in patients with severe left ventricular dysfunction. *Circulation* 1980;**61**:955–9.
- 14 **Maskin CS**, Forman R, Sonnenblick EH, *et al*. Failure of dobutamine to increase exercise capacity despite hemodynamic improvement in severe chronic heart failure. *Am J Cardiol* 1983;**51**:177–82.
- 15 **Kugler J**, Maskin C, Frishman WH, *et al*. Regional and systemic metabolic effects of angiotensin-converting enzyme inhibition during exercise in patients with severe heart failure. *Circulation* 1982;**66**:1256–61.
- 16 **Enriquez-Sarano M**, Rossi A, Seward JB, *et al*. Determinants of pulmonary hypertension in left ventricular dysfunction. *J Am Coll Cardiol* 1997;**29**:153–9.

IMAGES IN CARDIOLOGY

doi: 10.1136/hrt.2005.079137

Cardiac involvement of acute myeloid leukaemia

A 24-year-old man with a history of acute myeloid leukaemia in ongoing remission following allogeneic stem cell transplantation presented with palpitations, fatigue, subfebrile temperatures, and dyspnoea. Electrocardiography on admission provided signs of sick sinus syndrome. Twenty-four hour Holter monitoring revealed recurrent episodes of sinus arrests (panel A: RESP, respiration). Transthoracic echocardiography showed an irregular structure of the intra-atrial septum. Transoesophageal echocardiography examination demonstrated an echogenic mass without mobile portions infiltrating the roof of the right atrium (arrow) suggestive of tumour growth (panel B: LA/RA, left/right atrium, LV/RV, left/right ventricle). Magnetic resonance imaging showed a hyperintense tumour (arrows) in the cranial aspect of the right atrium (panel C: VCS, superior vena cava). Histopathological examination of myocardial biopsies

demonstrated fibrotic connective tissue infiltrated by atypical mononuclear cells and a strong positive naphtol-ASD-chloroacetate-esterase reaction in many of the blast-like tumour cells (arrow) confirming the diagnosis of an extramedullary manifestation of the leukemia (panel D). The patient was treated with reinduction chemotherapy using fludarabine, cytarabine and idarubicine.

F Breuckmann
J Barkhausen
R Erbel

frank.breuckmann@medizin.uni-essen.de

No conflict of interest has been declared by the authors. All authors contributed to the conception, design and analysis of the study as well as draft and revision of the manuscript. All authors had access to all data in the study and read and approved the final version, hereby holding responsibility for the decision to submit for publication