

Multi-modality advanced cardiac imaging for diagnosis and treatment monitoring in cardiac lymphoma.

A 76-year-old man presented with progressive breathlessness, orthopnoea and peripheral oedema over 2 weeks, without weight loss, fever or night sweats. Bedside echocardiography revealed a large pericardial effusion with signs of tamponade and a right ventricular mass (Panel A). Ultrasound and fluoroscopy guided pericardiocentesis removed 1800mls of blood-stained fluid. Cardiovascular magnetic resonance (CMR) imaging confirmed a large (9.1cm x 6.5cm) mass (Panel B, Supplementary Video 1) infiltrating the pericardium, and encroaching into the right atrium and ventricle but sparing the right coronary artery (arrow). T1 weighted fat imaging showed no evidence of fatty infiltration and first-pass perfusion and late gadolinium imaging demonstrated vascularity, suggesting a malignant mass; most likely lymphoma or angiosarcoma. Fluorodeoxyglucose positron emission tomography showed extensive tracer uptake in the heart but no metastases (Panel C). Pericardial effusion cytology and histology confirmed high grade B-cell lymphoma and a standard regimen of rituximab, cyclophosphamide, doxorubicin, vincristine, prednisolone (R-CHOP) was initiated with curative intent. Repeat CMR after 3 cycles of R-CHOP showed almost complete resolution of the mass (Panel D, Supplementary Video 2).

Primary cardiac malignancies are rarer than metastatic involvement (1.3% of all cardiac tumours, and 0.5% of all extra-nodal lymphomas). They can initially present with large pericardial effusions and haemodynamic instability. Cardiac lymphoma has favourable prognosis compared to other cardiac malignancies due to availability of

potentially curative chemotherapy, although can be fatal unless diagnosed and treated in time. Multimodality imaging was necessary for guiding pericardiocentesis, diagnosis and staging of the disease and subsequent monitoring of therapy.