Multimodality imaging of a primary cardiac diffuse large B-cell lymphoma

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A 60-year-old man was transferred to our institution for pericardiocentesis. A past medical history revealed dyspnoea and episodes of night sweats for the last month. Transthoracic echocardiography (TTE; Panel A and see Supplementary data online, Movie S1) and thoracic computed tomography (Panel B) showed a mass at the level of the right atrio-ventricular sulcus. Cardiac magnetic resonance (CMR) displayed an intramyocardial mass that was isointense in the T2-weighted images (Panel C) with an irregular late gadolinium enhancement. The mass spread from the right ventricle (RV) to the neighbouring segments of the right atrium (RA), thereby surrounding the proximal and medial portions of the right coronary artery (RCA). Significant RCA stenosis was excluded by coronary angiography (see Supplementary data online, Movie S2). Fluorodeoxyglucose-positron emission tomography (FDG-PET) indicated abnormal FDG storage within the mass (Panel D). Cytological analysis of the drained pericardial liquid showed elevated levels of lymphocytes. The unfavourable location of the mass at the right atrio-ventricular sulcus did not allow a catheter-based biopsy so a surgical approach was chosen (Panel E). However, the extensive involvement of the right atrial and ventricular wall did not permit a complete surgical removal. Histology showed a primary cardiac diffuse large B-cell lymphoma and the patient received chemotherapy using an EPOCH-RR regimen. After 2 months, significant reduction in tumour size was detected by FDG-PET (Panel F), TTE (see Supplementary data online, Movie S3), and CMR (see Supplementary data online, Figure S4).

Primary cardiac lymphomas account for 1–2% of malignant cardiac tumours. The RA/RV is most commonly affected with concomitant pericardial effusion (PE). Owing to its excellent soft-tissue contrast, CMR has the highest sensitivity to detect cardiac lymphoma and should be performed after echocardiographic exclusion of significant PE. The presented case illustrates that a multimodality imaging approach aids in the diagnosis of a mass and in the guidance of therapeutic strategies.

Panel A) TTE in a subcostal four-chamber view displaying a mass at a right atrio-ventricular sulcus (arrows). (Panel B) Cardiac computed tomography in a transverse plane with a large mass spreading from a part of the RV to the contiguous part of the RA (arrows). (Panel C) T2-weighted transverse CMR image shows an isointense intramyocardial mass (arrows). (Panel D) FDG-PET detecting pathological storage of FDG within the mass (arrows). (Panel E) Intraoperative view with arrows pointing at the mass. (Panel F) FDG-PET performed at 2-month follow-up displaying a significant reduction in tumour size following chemotherapy.

Supplementary data are available at European Heart Journal – Cardiovascular Imaging online.