Title page

Title: Extensive Cardiac Infiltrative Melanoma

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This manuscript received no funding.

Conflicts of interest: The authors report no relationships that could be construed as a conflict of interest.

Keywords: Cardiac tumour, melanoma

Word Count: Abstract: 94; Manuscript: 543

Abstract

We report an unusual clinical case of a 66 year-old patient with cardiac involvement from a metastatic melanoma, causing the formation of a large right atrial mass with extensive infiltration of the right atrial free wall, the inter-atrial septum, the coronary sinus and up to the mitral annulus and posterior wall of the right ventricle, unamendable to complete surgical excision. As secondary cardiac tumours are not part of routine daily clinical practice, we thought that this clinical case would be a good educational opportunity for the practicing clinicians, both specialists and non-specialists.

Extensive Cardiac Infiltrative Melanoma

A 66 year-old patient was admitted to our tertiary referral centre for excision of a large intra-cardiac mass. Past medical history included extra-nodal marginal zone lymphoma, atrial flutter on Rivaroxaban and melanoma, first diagnosed nine years earlier on the left foot.

On follow-up imaging, Cardiac MRI and computed tomography (CT) revealed a large bilobed opacity occupying the majority of the right atrium (RA) with a short stalk attached to the lateral wall of the RA. Tricuspid valve appeared to be slightly displaced. No obstruction in the inferior (IVC) or superior (SVC) vena cava was revealed. A decision was made to proceed with surgical intervention and excision of the RA mass.

A large echogenic right atrial mass (5.5 x 4cm) attached to the lateral wall of the RA was confirmed on intra-operative trans-oesophageal echocardiography (TOE) (Figure 1a, 1b, 1c). No significant tricuspid valve inflow obstruction was detected. Biventricular function was preserved.

The procedure was performed on cardio-pulmonary bypass with IVC cannulation from the right femoral vein and a Pacifico cannula to the SVC. Both SVC and IVC were snared to reduce the potential of air entry into the extracorporeal circuit. Antegrade cold blood cardioplegia was delivered through the aortic root following aortic cross clamp. Retrograde delivery was not considered in view of the potential for tumour spreading. The right atrium was opened and its edges suspended with stay sutures. A large mass was attached to the lateral wall of the right atrium and protruding towards the tricuspid valve with infiltration of the right atrial free wall, the inter-atrial septum, the coronary sinus and extension to the mitral annulus and posterior wall of the right ventricle (Figure 1d). The mass was excised as extensively as possible (Figure 1e, 1f). About two third of the right atrium were resected and a heterologous pericardial patch was used for its reconstruction. The tricuspid valve remained competent and did not need attention. The cross-clamp was released and the patient weaned off cardio-pulmonary bypass uneventfully. Two atrial and two ventricular pacing wires were placed and two mediastinal drains inserted. Haemostasis was carried out followed by closure in layers. The

patient made an uneventful recovery and was discharged home eight days postoperatively. The histology findings were consistent with epitheliod tumour in line with metastatic melanoma.

Discussion

We present a rare case of metastatic cardiac melanoma, with extensive cardiac involvement. Although primary cardiac tumours are extremely rare[1], metastases to the heart are more common and usually associated with a poor prognosis[2]. They often arise from the breast or the lungs but they also include lymphoma and melanoma[3]. Nevertheless, they are not part of daily clinical practice and may not be readily considered during a differential diagnosis. Therefore, we thought that the striking features of this case may be of interest to the practicing clinicians, both specialists and non-specialists, as an opportunity for further educational background. Clinical presentation is often non-specific and quite often asymptomatic[4]. Multimodality imaging approach is often required and Cardiac MRI is considered ideal. Despite its poor prognosis, surgical resection of metastatic cardiac tumours remains an appropriate course of action to reduce the potential embolic complications[5]. Our intervention allowed removal of the visible mass and institution of immune-modulation treatment in the local oncology centre as planned.

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Figure Legend:

Figure 1: a) Trans-oesophageal 4-chamber view showing the right atrial mass; b) Modified 4-chamber view for visualization of the stalk of the right atrial mass; c) Trans-oesophageal 4-chamber view with colour-Doppler around right atrial mass; d) Appearance of the mass in situ following right atriotomy; e) Excised mass; f) Significant resection of right atrium with residual mass infiltrating the posterior wall of the right ventricle;

Video Legend:

Transoesophageal 4-chamber view showing the right atrial mass;