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A serpentine mass through a patent foramen ovale

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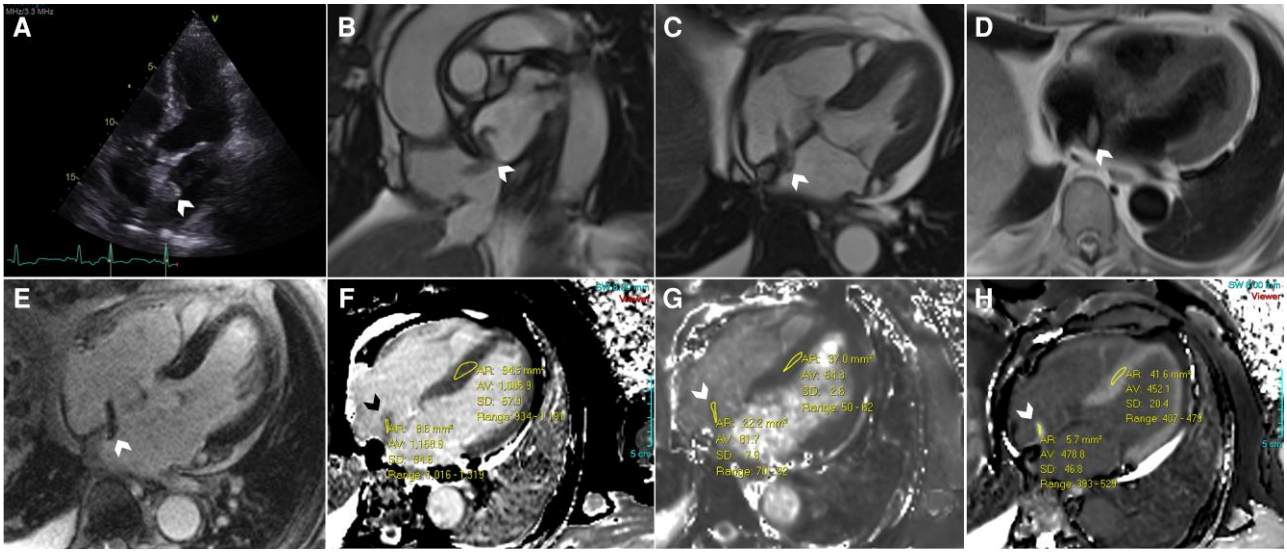

Figure 1. Cardiac imaging of the serpentine mass: trans-thoracic echocardiography (panel *A*) and cardiac magnetic resonance imaging (panels *B*-*H*).

An 85-year-old man with a history of malignant melanoma, previously treated with combined nivolumab and ipilimumab, presented with progressive breathlessness and syncope whilst walking. Physical examination was unremarkable apart from a small external nose laceration. A computed tomography scan of his brain and facial bones was unremarkable. An electrocardiogram revealed atrial fibrillation with fast ventricular rate; the symptoms were initially thought to be secondary to a tachy-cardiomyopathy. A trans-thoracic echocardiogram (TTE) showed a pedunculated, mobile mass in the left atrium fixed to the foramen ovale with fibrils extending into the right atrium (*Panel A*, arrow). A cardiac magnetic resonance (cMR) scan revealed an S shaped structure at the site of a patent foramen ovale (PFO), with the mass projecting into the right and left ventricles (*Panels B* and *C*, arrows, and Supplementary material online, *Supplementary Material* cine loop 1). On the axial HASTE anatomical sequence, the mass had a mid-intensity signal (*Panel D*, arrow), and there was no late gadolinium enhancement on the delayed enhancement sequence (*Panel E*, arrow). The native T1 and T2 maps showed increased T time (T1: 1159 ms vs. 1006 ms, *Panel F*, arrow; T2: 82 ms vs. 54 ms, *Panel G*, arrow) compared to the myocardium. There was a similar T1 time between the mass and myocardium after intravenous gadolinium administration; this was decreased compared to pre-contrast (479 ms vs. 452 ms,

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Panel H, arrow). Together, these findings favoured the diagnosis of thrombus. The patient had a poor response to bisoprolol and was commenced on sotalol alongside a direct-acting oral anticoagulant after multidisciplinary discussion. This case highlights the unusual presentation of thrombus extending through a patent foramen ovale with extension into both ventricles, the utility of cMR for the differentiation of thrombus and metastasis, and the association of increased thrombotic risk in patients treated with immune checkpoint inhibitors.

Supplementary material

Supplementary material is available at *European Heart Journal – Case Reports* online.

Consent: The authors confirm that written consent for submission and publication of this case report, including images and associated text, has been obtained from the patient's next of kin in line with COPE guidelines. Permission was obtained from the next of kin because the patient had died at the time of writing the case.

Conflict of interest: R.D. has received speaker fees from Bracco, Servier, and Bristol Myers Squibb outside the submitted work. D.J.W. has received consultancy and speaker fees from Boston Scientific and Medtronic outside the submitted work. All other authors have no relationships relevant to the content of this paper to disclose.

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Data availability

The data underlying this article are available in the article and in its online Supplementary material.