

# Right atrial mass: a challenging diagnosis

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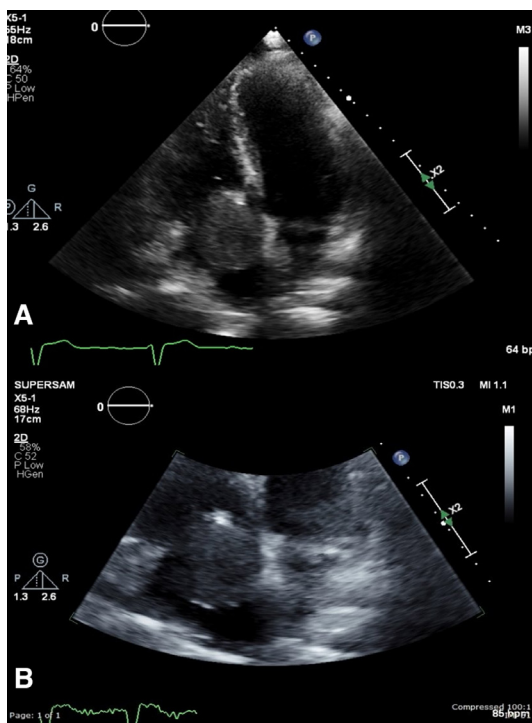
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## DESCRIPTION

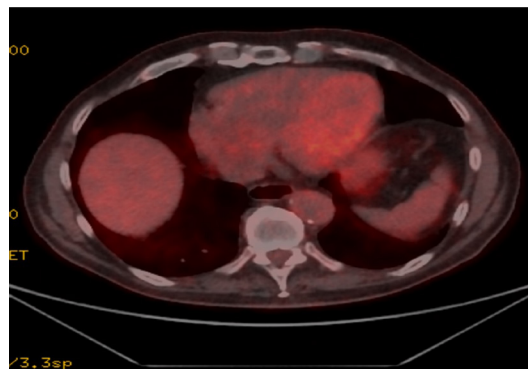
An 85-year-old Caucasian man was found to have an incidental right atrial mass on transthoracic echocardiography (figure 1A), requested following an opportunistic finding of Wenckebach heart block.

He reported no previous significant medical history, was fit and well on presentation with full exercise tolerance. There were no risk factors for venous thromboembolism, and he had no significant family history of cardiac disease. Physical examination was unremarkable; cardiac auscultation revealed no murmurs; his chest was clear and there was no evidence of right-sided heart failure.

Echocardiography demonstrated a broad-based, mobile mass arising from the interatrial septum filling 68% of the right atrium. This measured 4.5×4 cm from the apical four chamber view with partial prolapse through the tricuspid valve, but without outflow obstruction or tricuspid stenosis. CT pulmonary angiography (CTPA) confirmed a right atrial mass adherent to the interatrial septum but without discernible contrast enhancement or evidence of a stalk. Positron emission tomographic-CT (PET/CT) showed low grades of 18F-fluorodeoxyglucose (FDG) uptake in the mass only (figure 2).



**Figure 1** (A, B) 2D transthoracic echocardiography at presentation and 6-month surveillance demonstrating a right atrial mass with no change in size despite therapeutic anticoagulation.

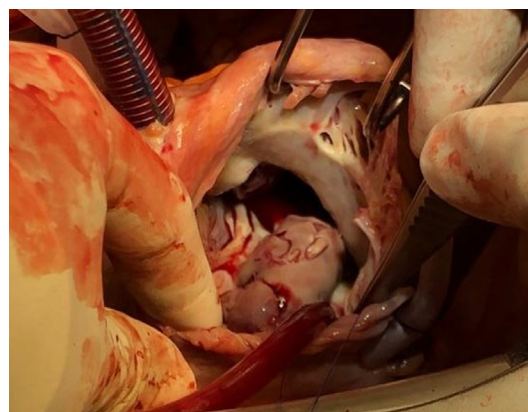


**Figure 2** Positron emission tomographic-CT showing low grade 18F-fluorodeoxyglucose uptake.

Serial echocardiography over a period of 6 months showed no change in the size of the mass despite therapeutic anticoagulation with heparin (figure 1B). The patient remained asymptomatic but eventually opted for surgery.

The accurate diagnosis of a poorly defined right atrial mass is challenging and not always easily visualised on standard imaging. The most common pathology is that of thrombus due to its connection with the deep venous system, however atrial myxoma, metastatic and other rare tumours have also been reported.<sup>1</sup>

Transthoracic echocardiography has traditionally been used as the primary diagnostic imaging technique for cardiac masses. Transoesophageal echocardiography provides a more detailed 3D image, while cardiac MRI is relatively effective in differentiating a cardiac mass.<sup>2</sup> FDG-PET/CT has an



**Figure 3** Intraoperative excision of the cardiac mass measuring 50×40×20 mm, weight 40 g. Macroscopic study reveals a smooth outer surface with multinodular appearance and focal myxoid change on sectioning typical of a benign atrial myxoma.



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## Images in...

increasing role, helping to differentiate between malignant and non-malignant cardiac lesions.<sup>3</sup>

At 6 months post initial diagnosis, the right atrial mass had not responded to anticoagulation, therefore behaving more like a

non-malignant cardiac tumour rather than a thrombus. Cardiac imaging initially suggested otherwise, evidenced by low grades of 18F-FDG uptake on PET/CT and no discernible contrast enhancement on CTPA.

Rarer tumours such as a cardiac papillary fibroelastoma and rhabdomyosarcoma were unlikely differential diagnoses, since the former is typically located on the valvular endocardium while the latter affects a younger demographic.<sup>4</sup> In this case, diagnostic ambiguity remained and tissue histopathology was required to confirm the diagnosis of atrial myxoma despite appropriate imaging (figure 3).<sup>5</sup>

### Patient's perspective

The mass, because of potential associated risks, led to advice to refrain from driving: this was a cause of much frustration which continued for 18 months. With no apparent changes to echo images after 6 months and having been advised of risks, I elected for its removal.

The first scheduled operation was cancelled over concerns that heparin may have adverse effects (allergy to Clexane noted after attempts to displace the mass). The second attempt was successful (using bivalirudin) and the solid mass was removed, with no grafted repair necessary.

Recovery went well, except for incidences of bradycardia, which prompted fitting of a pacemaker.

Staff in intensive care unit/high dependency unit were excellent. I was discharged after 13 days and now I am able to drive.

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### Learning points

- ▶ Right atrial masses present a diagnostic challenge due to heterogeneous differential diagnosis. This case illustrates the difficulty in diagnosis despite the use of modern imaging modalities.
- ▶ Positron emission tomographic-CT may have an increasing role in the diagnosis of a right atrial mass, while echocardiography and cardiac MRI are already established in this respect.

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