CASE REPORT

A left atrial mass in a patient with atrial fibrillation and previous renal cancer

Muhammad Muzaffar Mahmood,¹ Nu Nu Wynn,² Steven Sanderson,² Shahid Junejo²

¹Department of Cardiology, Sunderland Royal Hospital, Sunderland, UK
²Department of Cardiology, City Hospitals Sunderland, Sunderland, UK

Correspondence to
 Dr Muhammad Muzaffar Mahmood, muzafar.mahmood@gmail.com, muzafar@doctors.org.uk

SUMMARY

A 73-year-old man underwent a surveillance CT following a laparoscopic radical nephrectomy for left-sided renal cell carcinoma 3 years earlier. He had atrial fibrillation. CT identified a large left atrial mass. The differential diagnosis of this mass was thrombus, primary cardiac tumour or cardiac metastasis secondary to his previous renal cell carcinoma. Location, size and appearance of the mass on echocardiogram were unusual for a left atrial thrombus; however, following surgical removal pathological examination confirmed this as an organised thrombus. A brief discussion on diagnostic evaluation of a left atrial mass follows the case report.

BACKGROUND

Left atrial masses are uncommon. Thrombus and primary cardiac tumours (especially myxoma) are the most frequently encountered left atrial masses. Cardiac metastases have also been described secondary to various malignancies including renal cell carcinoma. Cardiac tumours in the presence of renal cell carcinoma, however, mostly result from direct caval tumour extension into the right atrium, and left atrial masses have only rarely been reported in such an association. The size, location and appearance of the atrial mass in our patient were highly unusual for a thrombus.

CASE PRESENTATION

A 73-year-old man underwent a surveillance CT of chest, abdomen and pelvis, following a laparoscopic radical nephrectomy for left-sided renal cell carcinoma 3 years earlier with no evidence of recurrence on follow-up imaging studies. He was symptom free and in particular there was no

history of fever, weight loss or weakness. Clinical examination identified an irregularly irregular pulse only and normal cardiac and general examination otherwise. An ECG revealed atrial fibrillation with fast ventricular rate. CT (figure 1) showed a 62×40 mm unenhancing mass with irregular outline in the left atrium (LA). A transoesophageal echocardiogram (TOE) confirmed a heterogeneous large mobile mass lesion in the LA (figure 2), attached to interatrial septum, with mildly impaired left ventricular systolic function. No valve lesions were identified. The mild left ventricular dysfunction was likely an effect of atrial fibrillation.

INVESTIGATIONS

Inflammatory markers and urine analysis were normal.

DIFFERENTIAL DIAGNOSIS

We considered thrombus, primary cardiac tumours, endocarditis and cardiac metastases as differential diagnosis of the left atrial mass in our patient. The history of previous renal cell carcinoma was important, as cardiac masses in association with renal cell cancer have been reported. Cardiac myxomas are the most common primary cardiac tumours and typically appear as a regular mobile polypoid mass attached to the interatrial septum at the fossa ovalis by a stalk. Cardiac thrombi are frequently encountered in patients with atrial fibrillation but location, size and appearance of the mass were unusual for a thrombus. Thrombi usually originate within the left atrial appendage, are more irregular in shape and attach to the endocardium via a broad base. Clinical presentation, echocardiographic features and negative inflammatory markers did not support a diagnosis of endocarditis.

Figure 1 CT thorax: a 62×40 mm mass with irregular outline in the left atrium.

Figure 2 Transoesophageal echocardiogram confirming a large left atrial mass.

To cite: Mahmood MM, Wynn NN, Sanderson S, et al. *BMJ Case Rep*. Published online: [please include Day Month Year] doi:10.1136/bcr-2013-009883

Figure 3 Non-contrast-enhanced CT thorax: follow-up image confirming removal of left atrial mass.

TREATMENT

In view of the embolic risk and to establish a histological diagnosis the patient was referred for open surgical removal of the mass. Following excision of the mass LA was reconstructed with pericardial patches. Macroscopic examination of the left atrial mass showed four irregular fragments of tissue measuring altogether 73×42×33 mm in size. Appearance was consistent with fresh thrombi. There was no evidence of malignant cells and microbiological studies of the thrombus were negative.

OUTCOME AND FOLLOW-UP

Postoperatively he was formally anticoagulated with warfarin and the ventricular rate was controlled using β -blockers. Three years after left atrial thrombectomy the patient has persistent atrial fibrillation and is clinically well. No metastatic disease or recurrent cardiac mass has become evident on follow-up imaging (figure 3).

DISCUSSION

The size, location and appearance of our patient's left atrial mass were unusual. Differential diagnosis of a left atrial mass is thrombus, endocarditis, primary cardiac tumour or cardiac metastases. The LA is a common site for thrombus formation but the majority of LA thrombi originate and remain confined to the left atrial appendage. Some cardiac thrombi may completely detach and embolise. Left atrial appendage is poorly visualised by transthoracic echocardiogram (TTE) and transoesophageal echocardiogram (TOE) is the preferred technique for detection of left atrial thrombi¹ in adults.

Cardiac tumours are primary, originating from the heart or secondary to metastases from other malignancies. The majority of primary cardiac tumours are either myxomas or sarcomas.² Left atrial myxoma, the commonest primary cardiac tumour, is typically attached to the interatrial septum. Our patient had a history of a recent renal cell carcinoma and right atrial mass secondary to caval propagation of renal cell carcinoma is well described but left atrial mass in such an association has been less

frequently reported.³ No right atrial mass was seen in our patient and there was no suggestion of atrial septal defect.

Echocardiography (TTE and TOE) has the best spatial and temporal resolution among the different cardiac imaging modalities and is an accurate technique to detect and characterise cardiac masses. TOE can be an invaluable tool in differentiation of cardiac masses and in defining left atrial abnormalities. Cardiac MR (CMR) imaging is being increasingly used for anatomic definition and tissue characterisation of the cardiac masses. It can be difficult to differentiate thrombus from a myxoma on MRI because both may have a heterogeneous appearance with areas of calcification; however, anterior origin from the interatrial septum and gadolinium contrast-enhancement favours myxoma.⁴ CMR was not available at our unit and therefore was not performed. Surgical intervention should be considered where histological diagnosis is required and to minimise embolic and haemodynamic impact of the mass. After discussion with the patient and a multidisciplinary review involving cardiologists, urologists and cardiothoracic surgeons, the patient was referred for surgical thrombectomy in order to avoid the risk of embolisation and to clarify the histology.

Learning points

- ▶ Differential diagnosis of a left atrium (LA) mass is thrombus, endocarditis or cardiac tumour.
- ▶ Majority of LA thrombi originate and remain confined to left atrial appendage.
- ▶ Ninety per cent of primary cardiac tumours are either myxomas (mostly surgically resectable) or sarcomas (usually poor prognosis regardless of treatment).
- ▶ Where diagnostic uncertainty persists after transthoracic echocardiography, transoesophageal echocardiography and cardiac MRI may prove helpful to characterise cardiac masses.
- ▶ Surgical intervention should be considered in cases where histological diagnosis is required and to minimise embolic and haemodynamic impact of the mass.

Contributors MMM wrote the initial draft. All authors reviewed and amended the article. SJ is the guarantor.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Alam M, Sun I. Transesophageal echocardiographic evaluation of left atrial mass lesions. *J Am Soc Echocardiogr* 1991;4:323–30.
- 2 Pepi M, Evangelista A, Nihoyannopoulos P, et al. Recommendations for echocardiography use in the diagnosis and management of cardiac sources of embolism. *Eur J Echocardiogr* 2010;11:461–76.
- 3 Miyamoto MI, Picard MH. Left atrial mass caused by metastatic renal cell carcinoma: an unusual site of tumor involvement mimicking myxoma. *J Am Soc Echocardiogr* 2002;15:847–8.
- 4 Sparrow PJ, Kurian JB, Jones TR, et al. MR imaging of cardiac tumors. *Radiographics* 2005;25:1255–76.

Copyright 2013 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow