

## CASE REPORT

# A case of right atrial appendage aneurysm mimicking a pericardial cyst on echocardiogram

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## Summary

Right atrial appendage aneurysms (RAAAs) are rarely encountered. If symptomatic, they present with atrial arrhythmias or embolic events. Surgical resection is indicated for symptomatic patients. We describe a 65-year-old man presenting with palpitation for 6 months. Electrocardiogram showed atrial flutter. Transthoracic echocardiography revealed a large thin-walled cystic mass anterior to right ventricular outflow tract, which was confirmed to be a giant RAAA by contrast transoesophageal echocardiography and later by contrast-enhanced computerised tomography. The patient underwent electrocardioversion, following which he remained in sinus rhythm and was asymptomatic during the 3 months follow-up period.

### Learning points:

- RAAA can present with atrial flutter.
- Transoesophageal contrast echocardiography is the most valuable non-invasive tool in diagnosis of RAAA.
- Although computed tomography scan is not necessary for establishing the diagnosis, it may provide useful information regarding the structural anatomy.

## Background

Atrial appendage aneurysms, particularly those involving the right side, are rarely encountered (1). Less than 20 cases of right atrial appendage aneurysms (RAAAs) have been reported. These patients most commonly present with palpitation and dyspnoea, but some are asymptomatic and diagnosed incidentally (1). They are most often congenital, and potential complications are arrhythmia, thrombosis, pulmonary embolism and rupture of the dilated appendage (2, 3).

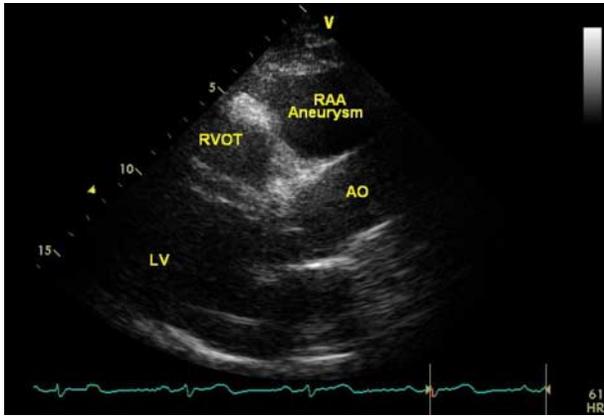
## Case presentation

A 65-year-old man presented to our clinic with palpitations for 6 months and recent development of dyspnoea on moderate exertion (NYHA class II). He was examined by his

family physician and started on warfarin 5 mg daily, digoxin 0.125 mg daily and verapamil 40 mg twice daily for his dysrhythmia. Past medical history was unremarkable with no history of chest trauma. On physical examination, the heart sounds were regular and the lungs were clear to auscultation. Electrocardiogram showed atrial flutter with 3:1 AV block.

## Investigation

Transthoracic echocardiography showed a large thin-walled cystic cavity anterior to the right ventricular outflow tract resembling a pericardial cyst (Figs 1 and 2, Videos 1 and 2). Transoesophageal echocardiography (TEE) showed a large right atrial aneurysm (Figs 3 and 4, Videos 3 and 4). Contrast injection confirmed the connection of the aneurysmal cavity to right atrium (Fig. 5, Videos 5 and 6). CT angiogram was performed



**Figure 1**  
Transthoracic parasternal long-axis echocardiogram showing the thin-walled cavity anterior to RVOT.

for better defining the aneurysm (Fig. 6). TEE with contrast injection has been proposed as an accurate non-invasive tool in diagnosis of atrial appendage aneurysms (3), while CT angiography and magnetic resonance imaging remain as excellent adjunct imaging techniques and should be preserved for patients, in which case the diagnosis is not clear on TEE (1).

### Treatment and outcome

After discussing the treatment options with the patient, we opted to control arrhythmia with a close follow-up. The patient underwent electrocardioversion. He was discharged on oral anticoagulation. He has remained

### Video 1

Transthoracic parasternal long-axis echocardiogram showing the thin-walled cavity anterior to RVOT. Download Video 1 via <http://dx.doi.org/10.1530/ERP-14-0034-v1>

### Video 2

Transthoracic parasternal short axis echocardiogram showing the thin-walled cavity anterior to RVOT. Download Video 2 via <http://dx.doi.org/10.1530/ERP-14-0034-v2>

### Video 3

Transoesophageal echocardiogram showing the aneurysmal dilatation of RAAA. Download Video 3 via <http://dx.doi.org/10.1530/ERP-14-0034-v3>

### Video 4

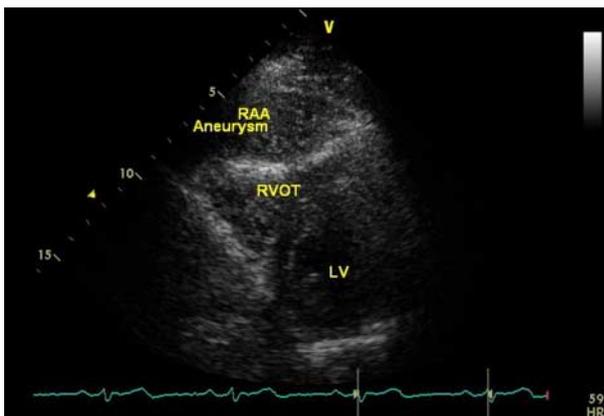
Transoesophageal echocardiogram showing the aneurysmal dilatation of RAAA. Download Video 4 via <http://dx.doi.org/10.1530/ERP-14-0034-v4>

### Video 5

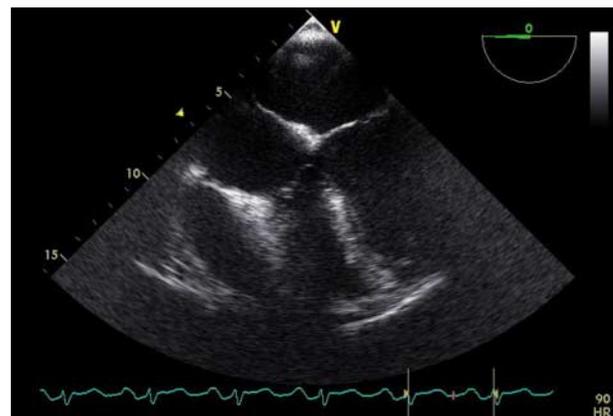
Contrast TEE delineating the connection of aneurysmal cavity to right atrium. Download Video 5 via <http://dx.doi.org/10.1530/ERP-14-0034-v5>

### Video 6

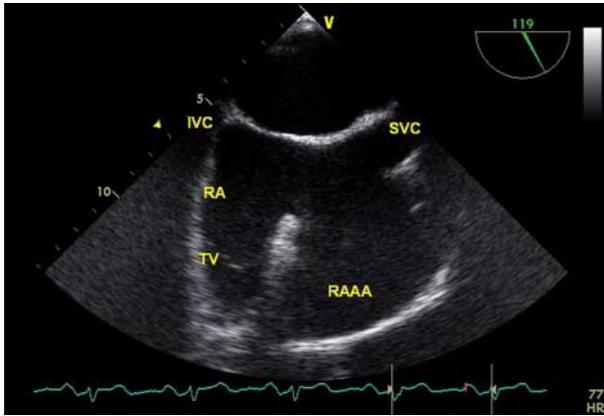
Contrast TEE delineating the connection of aneurysmal cavity to right atrium. Download Video 6 via <http://dx.doi.org/10.1530/ERP-14-0034-v6>



**Figure 2**  
Transthoracic parasternal short axis echocardiogram showing the thin-walled cavity anterior to RVOT.



**Figure 3**  
Transoesophageal echocardiogram showing the aneurysmal dilatation of RAAA.

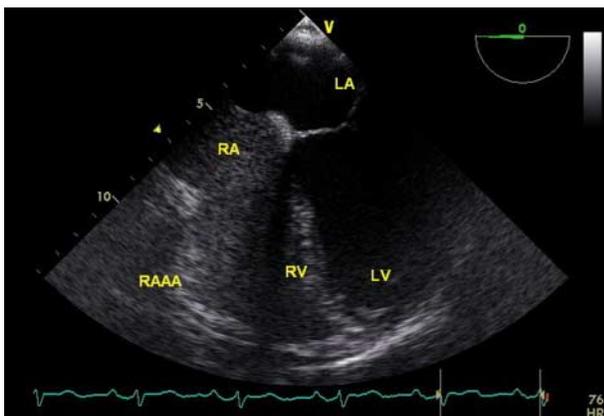


**Figure 4**  
Transoesophageal echocardiogram showing the aneurysmal dilatation of RAAA.

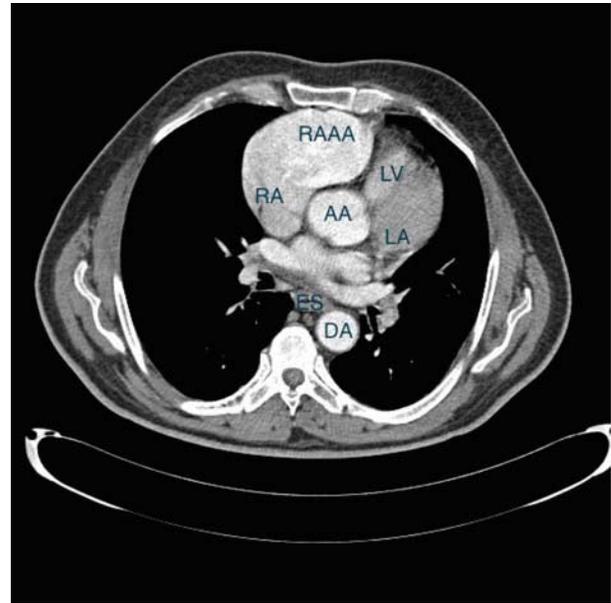
in sinus rhythm and has been asymptomatic for over 3 months.

## Discussion

RAAA is a very rare finding and, as in our patient, most commonly presents with palpitation and dyspnoea. The presented case was interesting for the presence of cystic mass in RVOT, which resembled a pericardial cyst. Contrast TEE led to accurate diagnosis, which was later confirmed by contrast CT angiography. Surgical resection is recommended for symptomatic patients and those with enlarging aneurysm in serial imaging. Anti-coagulation is indicated for asymptomatic patients to



**Figure 5**  
Contrast TEE delineating the connection of aneurysmal cavity to right atrium.



**Figure 6**  
Contrast-enhanced CT angiogram showing the large RAAA. RAAA, right atrial appendage aneurysm; AA, ascending aorta; LV, left ventricle; RA, right atrium; LA, left atrium; DA, descending aorta.

prevent adverse embolic events and a combination of cardioversion and antiarrhythmic drugs are used to control associated dysrhythmia in an attempt to convert to a sinus rhythm (1).

### Declaration of interest

The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of the research reported.

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### Patient consent

A written informed consent was obtained from the patient for publication of the submitted article and images.

### Author contribution statement

M Toufan and L Pourafkari performed the transthoracic and transoesophageal echocardiogram and prepared the manuscript. F Akbarzadeh was the primary physician in charge of the patient for his atrial flutter referring him for further evaluation for the cystic mass in his echo and helped in literature review and manuscript draft. N D Nader critically revised the report and helped in interpretation of data and management decision.

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## References

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