CASE REPORT

A rare case of concurrent multichamber thrombosis complicated by cardioembolic stroke in a reversible postpartum thyrotoxic cardiomyopathy

Cristian Parisi, Emanuele Canali, Fabrizio Proietti

Operative Unit of Cardiology and Intensive Care, Aurelia Hospital, Rome, Italy

Correspondence to
Dr Emanuele Canali,
emanuele.canali@gmail.com

SUMMARY

We describe a rare case of cardiac multichamber thrombosis in a young woman admitted with heart failure and atrial fibrillation, who was later found to have reversible postpartum thyrotoxic cardiomyopathy. A transoesophageal echocardiogram demonstrated a patent foramen ovalis with an over-riding thrombus. The clinical scenario was complicated by a cardioembolic stroke upon spontaneous restoration of sinus rhythm.

BACKGROUND

To the best of our knowledge, this is just the second report on a patient with reversible-dilated cardiomyopathy associated with postpartum thyrotoxicosis. It is also one of the few echocardiographic demonstrations of the role that patent foramen ovalis (PFO) plays in 'cryptogenic' stroke.

CASE PRESENTATION PRESENTING FEATURES, MEDICAL/SOCIAL/FAMILY HISTORY

A 35-year-old woman with no cardiovascular risk factors was admitted to our emergency department for hypotensive acute heart failure associated with atrial fibrillation (figure 1). She had clinical signs of postpartum (12 weeks) thyrotoxicosis, supported by lab testing (free-triiodothyronine (FT3) 6.80 pg/ml;

free-thyroxine (FT4) 2.35 ng/ml and thyroid-stimulating hormone (TSH) 0.07 μ UI/ml).

In view of the haemodynamic instability, restoration of sinus rhythm was deemed necessary. Therefore a transoesophageal echocardiogram (TOE) was performed to exclude the presence of cardiac intracavity thrombus prior to electrical cardioversion. The TOE showed multichamber thrombosis (videos 1–3). Electrical cardioversion was therefore postponed, and she was started on anticoagulation, digoxin for heart rate control and levosimendan for acute heart failure treatment. After 12 days, we observed a spontaneous restoration of the sinus rhythm (figure 2). Unfortunately, despite optimal anticoagulation range, the patient experienced sudden aphasia and left hemiplegia. An urgent head CT excluded intracranial haemorrhage. A further CT (after 48 h) showed a large ischaemic area involving the right hemisphere (figure 3). A predischARGE TOE documented only the persistence of small left apical appendage thrombosis without the over-riding thrombus into PFO (figure 4), and smaller left ventricular (LV) end-systolic and end-diastolic diameters with a significant improvement of LV systolic function (quantitative ejection fraction, EF 48%). The patient was discharged on optimal medical therapy, asymptomatic, with a recommendation of thyroid surgical treatment.

Figure 1 Admission ECG showing atrial fibrillation.

To cite: Parisi C, Canali E, Proietti F. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2012-008452

Video 1 Transoesophageal echocardiogram showing a big thrombus in left atrial appendage; blurred left ventricle apical thrombosis.

Video 3 Transoesophageal echocardiogram showing an aneurysm of interatrial septum with an over-riding thrombus. Note again the enlarged thrombosis of right atrial appendage.

INVESTIGATIONS

A chest x-ray showed bilateral pleural effusion, especially in the right costophrenic angle. A chest CT demonstrated multiple areas of right lung consolidation without signs of filling defects in the main lobar arteries; incidentally, a possible right atrial and left ventricle thrombosis was noticed (figure 5). A transthoracic echocardiogram showed a dilated heart with severe LV systolic dysfunction (quantitative EF 22%) and an over-riding atrial septum thrombus. A TOE demonstrated multichamber thrombosis involving left and right atrial appendages, LV apex, the PFO with the thrombus partially floating in the right and left atria (videos 1–3).

DIFFERENTIAL DIAGNOSIS

Hyperthyroidism often presents with cardiovascular signs and symptoms. In pregnancy, the most common cause of hyperthyroidism is Grave's disease, occurring in 0.2% of pregnancies. The form presenting as dilated cardiomyopathy and severe LV systolic dysfunction is very rare.^{1–3}

In this patient, the presence of dyspnoea and very high D-dimer levels with marked respiratory alkalosis raised a

suspicion of pulmonary embolism. A chest angio-CT excluded the presence of fillings defect in the lobar arteries, but demonstrated the presence of multiple areas of right lung consolidation suggestive of right-side pneumonia.

Right-side pneumonia, multichamber thrombosis and the lab test evidence of activated coagulation system with a depletion of platelet count could be ascribable to a disseminated intravascular coagulation (DIC). Infections could be one of the causes of haematological disorders with activation of platelets. This condition, in conjunction with blood stagnation that can be seen in dilated cardiomyopathy, could lead to intracardiac thrombosis. However, the treatment of underlying conditions led to a slow resolution of clinical symptoms and haematological values in this patient.

TREATMENT

Levosimendan, furosemide and heparin infusion with subsequent oral anticoagulant therapy (OAT) were soon started for acute heart failure and persistent atrial fibrillation treatment. High-dose methimazole (for the hyperthyroidism) and antibiotic treatment (for right-side pneumonia) were also started.

OUTCOME AND FOLLOW-UP

At 30 day follow-up, the patient has no signs or symptoms of heart failure. A follow-up echocardiogram confirmed normal LV and right ventricular diameters, a further improvement of the systolic function (EF 55%) and normal diastolic indices. Therapy for heart failure was subsequently discontinued. In consideration of persistence of very low TSH levels, surgical treatment was indicated.

DISCUSSION

In this clinical case report, we described a rare case of multi-chamber thrombosis in the context of a postpartum thyrotoxic cardiomyopathy in a young woman admitted for heart failure with severe systolic dysfunction. The peculiarities of our case report are that this type of reversible-dilated cardiomyopathy was described only in one case report.³ The role of PFO diagnosed by TOE in cryptogenic stroke was described since 2000,⁴ but only few articles demonstrated the real existence of 'thrombus-in-transit'.^{5,6}

In this case, the use of levosimendan in acute heart failure helped counteract the effect of adrenergic β -receptors activation

Video 2 Transoesophageal echocardiogram showing a big thrombus in right atrial appendage and a thrombus entrapped into patent foramen ovale.

- 4 De Castro S, Cartoni D, Fiorelli M, *et al.* Morphological and functional characteristic of patent forame ovale and their embolic implications. *Stroke* 2000;31:2407–13.
- 5 Cakir C, Duygu H, Eren NK, *et al.* Witnessing a rare event—thrombus seeking its route in right atrium: “thrombus-in-transit”. *J Cardiovasc Med* 2008;9:1166–8.
- 6 Aghasadeghi K, Mollazadeh R. A dumbbell thrombus entrapped in patent forame ovale. *Eur J Echocardiogr* 2008;9:155.
- 7 McMurray JJ, Adamopoulos S, Anker SD, *et al.* ESC Committee for Practice Guidelines. ESC guidelines for the diagnosis and treatment of acute and chronic heart failure 2012. *Eur J Heart Fail* 2012;14:803–69.
- 8 Furie KL, Kasner SE, Adams RJ, *et al.* Guidelines for the prevention of stroke in patients with stroke or transient ischemic attack: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke* 2011;42:227–76.

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