

Functional mitral stenosis, atrial fibrillation and heart failure secondary to left atrial compression by the formation of a localised periatrial haematoma after cardiac resuscitation

Czynnościowa stenozą mitralną, migotanie przedsionków i niewydolność serca w następstwie ucisku przedsionka przez ograniczony krwiak okołopredsiionkowy powstały podczas resuscytacji krążeniowej

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Abstract

A 53-year-old male patient was diagnosed with progressive dyspnoea after primary coronary intervention of circumflex lesion. Resuscitation was performed in the follow-up period due to the development of asystole. Control angiography showed patent stent without perforation signs and echocardiography revealed prominent compression of the left atrium by a periatrial mass. Magnetic resonance imaging (MRI) was performed for differential diagnosis. The MRI revealed an isolated periatrial haematoma compressing the left atrium and obliterating the mitral valve orifice. Haematoma formation had most probably occurred after resuscitation, since the initial echocardiogram was normal. After a one week follow-up, there had been no decrease in the size of the haematoma, and surgery was proposed. Left atrial compression by the formation of a periatrial haematoma related to resuscitation has not been reported before. It can cause atrial fibrillation and rapidly progressive heart failure. A more accurate diagnosis could be made using an MRI study.

Key words: haematoma, left atrium, compression

Kardiol Pol 2013; 71, 8: 848–851

INTRODUCTION

Left atrial compression is a rare entity which can yield prominent haemodynamic instability. In most cases, compression aetiology is either oesophageal or aortic pathologies [1]. Here, we present a case of localised periatrial haematoma formation after cardiac resuscitation which mimicked an intraatrial mass. The patient was progressed to symptoms of mitral stenosis, atrial fibrillation (AF) and eventually heart failure (HF). This is an unusual clinical picture, and we could not find any similar case in the medical literature.

CASE REPORT

A 53-year-old male patient was referred to our hospital with complaints of chest pain. Acute inferior myocardial infarction was diagnosed after initial evaluation and the patient was transferred to the catheter laboratory for primary coronary intervention. Coronary angioplasty and stent were performed to a totally occluded circumflex artery. There was also a myocardial bridge in the mid left anterior descending (LAD) artery causing 60% stenosis during systole. Medical follow-up was decided for the LAD lesion, and the patient was taken to

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Received: 13.03.2012

Accepted: 14.03.2012

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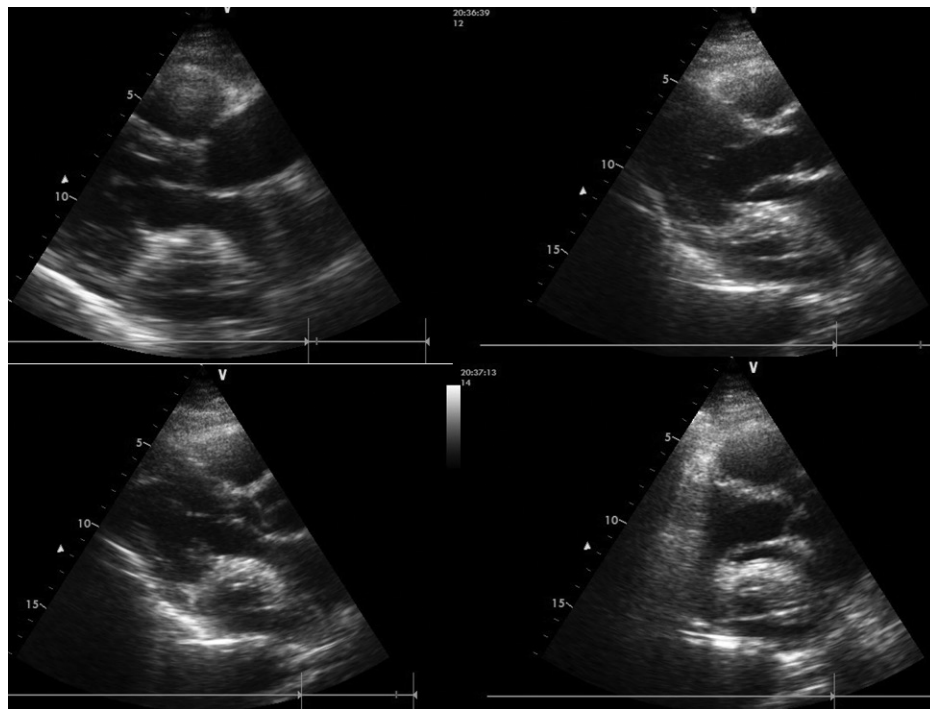


Figure 1. Transthoracic echocardiogram in the parasternal long axis view demonstrating left atrial compression and blockage of the posterior annulus

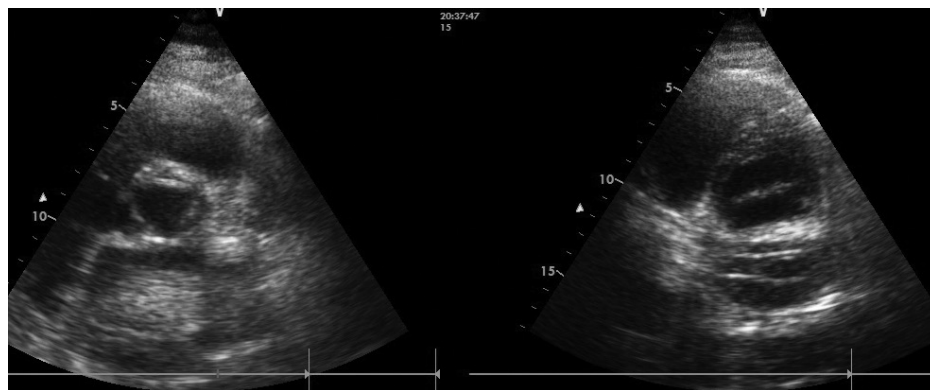


Figure 2. Transthoracic echocardiogram in the parasternal long axis view showing a false intraatrial mass image (left side) and blockage of the posterior leaflet surface (right side)

the coronary intensive care unit. In the follow up period, asystole was observed in the intensive care unit and 30 seconds duration of chest compression performed immediately. Sinus rhythm was obtained without the need for intubation. A 600 mg clopidogrel loading dose and 75 mg daily dose, aspirin 300 mg, heparin 10,000 unit during procedure and enoxaparine 8 mg twice daily was given as antithrombotic therapy. Control angiography, performed 12 h later, showed patent stent without signs of coronary perforation. Subsequently, the patient described progressive dyspnoea. Although the initial transthoracic echocardiogram (TTE) was normal apart from inferior wall hypokinesia, control TTE showed a large

mass compressing the left atrium (LA) from the base and lateral side, showing continuity with a posterior annulus mimicking an intraatrial mass. It was nearly completely obliterating the posterior annulus and posterior leaflet, leading to functional mitral stenosis (Figs. 1–3). Mitral valve area was measured as 1.4 cm² with pressure half time formula in some beats and there was > 50% change in the velocity of the E waves in the Doppler mode echocardiographic study.

The patient was followed up with supportive diuretic therapy. However, the patient progressed to AF and later HF. Dynamic cardiac magnetic resonance imaging (MRI) was performed for differential diagnosis. The MRI showed a localised

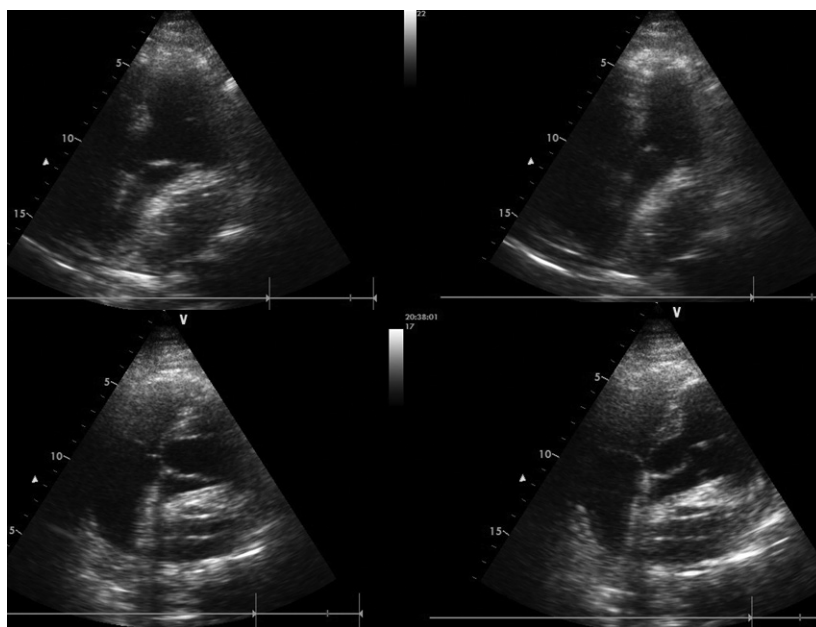


Figure 3. Transthoracic echocardiogram in the apical four-chamber view demonstrating compression of the left atrium and obliteration of the posterior annulus

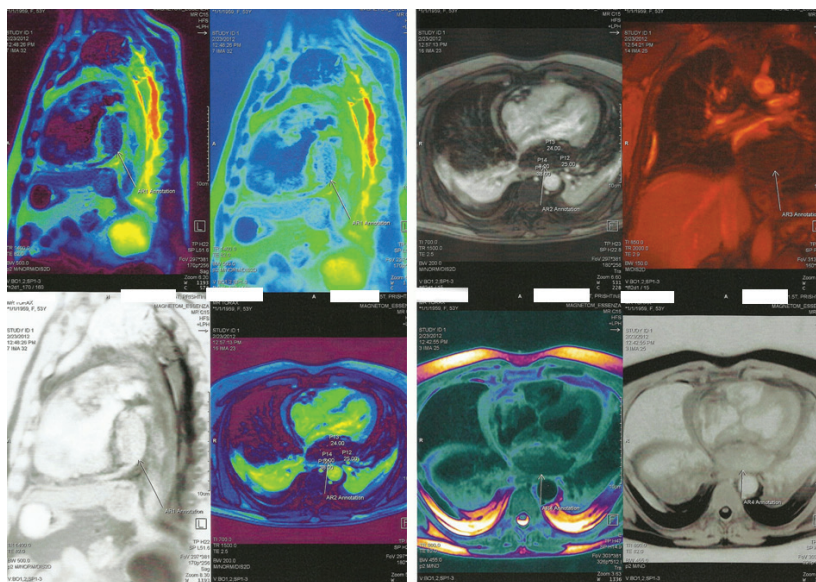


Figure 4. Magnetic resonance images showing a periatrial mass, appropriate for haematoma, compressing the left atrium

haematoma of 65 × 45 × 38 mm compressing the LA from the posterolateral side (Fig. 4). There was no pericardial effusion or additional mediastinal pathology. The spontaneous haematoma formation was most probably triggered by the chest compression during resuscitation. After that, sinus rhythm was obtained with amiodarone infusion and the patient was followed up for a week with supportive therapy. However, control TTE examination did not show any regression in the size of the haematoma and surgery was scheduled for the patient. But the patient refused surgery and he was discharged with medical treatment.

DISCUSSION

The LA is a relatively thin walled chamber with low intraluminal pressure that makes the LA vulnerable to compression by mediastinal structures. Most structures are related to either the oesophagus or the aorta including oesophageal hernia, oesophageal tumours and haematoma, achalasia, aneurysm and dissection of ascending and/or descending aorta. More rarely, mediastinal tumours including lymphoma, schwannoma, thymoma and also sarcoidosis, lung tumours and brochogenic cysts may also cause LA compression [1, 2]. In

the majority of cases, the mentioned structures grow slowly and patients may not display symptoms for a long time [1]. Haemodynamic consequences depend on the extent of the compression. Symptomatology can vary from simple dyspnoea to decompensated HF due to low cardiac output [1–3]. A diagnosis could be made using TTE. However, these structures can be misdiagnosed as intraatrial masses, and for a differential diagnosis, transoesophageal echocardiogram, computed tomography scan and MRI study could give more accurate results [4, 5].

Left atrial compression of abrupt onset is usually associated with aortic dissection or bleeding and haematoma secondary to chest trauma which requires immediate diagnosis and therapy [1, 2, 6]. Isolated and localised periatrial haematoma formation after cardiac resuscitation has not been reported in the literature. Thus, it was difficult to make an exact diagnosis for our case. Regarding our case, the mass was compressing the majority of the LA cavity and nearly completely obliterating the posterior annulus and posterior leaflet, leading to signs of mitral stenosis. Functional mitral stenosis is a term usually used for a postoperative ring annuloplasty operation for mitral regurgitation. It is usually seen with the usage of smaller sized rings and it means mitral stenosis is not related to leaflet pathology itself.

In our case, due to blockage of the posterior leaflet surface, signs of mitral stenosis were observed in the Doppler mode echocardiogram. The periatrial structure was mimicking an intraatrial mass image; however, we investigated also for extracardiac pathology, hence the initial echocardiographic study was normal. We performed an MRI study for more accurate diagnosis because of the unusual presentation. MRI results supported a periatrial pathology and the compressing mass was appropriate with a haematoma image. After diagnosis, we followed the patient with medical therapy due

to the supposed high perioperative risk and we discontinued heparin and aspirin. After one week of follow up, there was no regression in the mass and so surgery was scheduled. However, the patient did not accept surgical treatment. In the second month control echocardiogram, there was a slight regression of the periatrial mass, but prominent compression of the LA and findings of functional mitral stenosis persisted.

CONCLUSIONS

Left atrial compression by the surrounding structures is a very rare entity. Adjacent haematoma formation could lead to prominent LA compression and HF with abrupt onset. Apart from chest trauma, chest compression in cardiac resuscitation can also produce isolated periatrial haematoma formation, especially in patients under triple antithrombotic agents. Small regression could be seen after organisation of the haematoma in the follow-up, but surgery is still indicated due to the persistence of compression by the mass.

Conflict of interest: none declared

References

1. van Rooijen JM, van den Merkhof LF. Left atrial impression: a sign of extra-cardiac pathology. *Eur J Echocardiogr*, 2008; 9: 661–664.
2. Yıldırım N, Dusak A, Onuk T, Aydın M. Severe hemodynamic compromise due to left atrial compression by a dissecting aortic aneurysm. *Turk Kardiyol Dern Ars*, 2010; 38: 359–362.
3. Nault I, Bertrand OF. Severe haemodynamic compromise due to left atrial compression by oesophageal haematoma. *Heart*, 2007; 93: 1190.
4. Liao ZY, Tsai JP, Kuo JY, Hung CL. Large aortic aneurysm mimicking a cardiac tumor. *Cardiovasc Ultrasound*, 2010; 8: 33.
5. Ahn SG, Tahk SJ, Shin JH. Images in cardiology. Abnormal left atrial membranous structure in transthoracic echocardiography caused by external compression from a large bronchogenic cyst. *Heart*, 2006; 92: 200.
6. Hermans K, Vermeulen J, Meyns B. Isolated rupture of the left atrial appendage after blunt chest trauma. *Acta Cardiol*, 2004; 59: 663–664.