Pericardial effusion causing echocardiographic mimicking of left intra-atrial thrombus

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A 71-year-old woman presented with dyspnoea and irregular tachycardia. Investigation revealed the presence of pericardial effusion and left intra-auricular mass. The patient was sent to the operation theatre and after pericardial drain, the intra-atrial mass disappeared with retroactive diagnosis of left atrial appendage invagination.

KEYWORDS
Pericardial effusion; Atrial fibrillation; Intra-atrial mass

A 71-year-old woman presented at the CCU, 2 months after a triple coronary artery bypass (CABG), with worsening dyspnea and irregular tachycardia. Clinical examination revealed right heart failure signs with an unstable haemodynamic status. Electrocardiogram showed atrial fibrillation at 140 bpm. The patient was treated, at CCU entrance, with effective anticoagulation (continuous infusion of non-fractioned heparin with heparinaemia of 0.5 UI) and amiodarone along with the classical treatment of ischaemic cardiomyopathy. Echocardiography showed an important circumferential pericardial effusion (Figure 1, arrow) and a left intra-auricular mass (Figures 2 and 3 left, arrows, see Supplementary data online, Video 1) without mitral valve obstruction. In the context of recent atrial fibrillation and post-operative CABG, we suspected an intra-atrial thrombus. In our case, initially, the patient was under aspirin and in sinus rhythm. The occurrence of arrhythmia, dyspnoea, and the features of the intra-atrial mass at echocardiography was in favour of the diagnosis of intra-atrial thrombus. In order to avoid complications of effective anticoagulation therapy in the context of tamponade, we decided, in an initial approach, to drain the pericardial fluid and to evaluate the mass by intraoperative transoesophageal echocardiography. This strategy allows us to correct our first impression and to make the diagnosis of left atrial invagination secondary to a located pericardial effusion.

Post-cardiac surgery inverted LAA is a rare manifestation, often asymptomatic and mostly detected in systematic echocardiographic follow-up of the patient. First described by Minich et al. in 1995 as a crooked finger appearance and a broad thumb-like mass into the left atria, multiple other cases has been described after Ross procedure or cardiac defect correction surgery. According to Allen et al., LAA invagination has not a prothrombotic effect because of the fully endothelization of the structure and the normal blood velocities.

Our case was somewhat unique because of its dramatic presentation with cardiac tamponade and its immediate need to have an accurate diagnosis in order to avoid long-lasting anticoagulation in a context of cardiac tamponade. The second specificity of this case was that the LAA invagination was secondary to the located pericardial effusion and not because of the cardiac surgery itself.

Discussion

Delayed cardiac tamponade is a serious well-described condition after cardiac surgery. The incidence of significant pericardial effusion is ranged from 0.8 to 6%.

Generally, the association of left intra-atrial mass after CABG in patient with recent arrhythmia with no curative anticoagulation suggests the presence of left intra-atrial thrombus. In our case, initially, the patient was under aspirin and in sinus rhythm. The occurrence of arrhythmia, dyspnoea, and the features of the intra-atrial mass at echocardiography was in favour of the diagnosis of intra-atrial thrombus. In order to avoid complications of effective anticoagulation therapy in the context of tamponade, we decided, in an initial approach, to drain the pericardial fluid and to evaluate the mass by intraoperative transoesophageal echocardiography. This strategy allows us to correct our first impression and to make the diagnosis of left atrial invagination secondary to a located pericardial effusion.

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Echo characteristics, contrast agent, power Doppler, or cardiac MRI can help for LAA invagination diagnostic. The echo characteristic with hypoechogenicity of the mass centre (comparable with the LA cavity) concomitantly with no LA appendage visualization is in favour of LAA invagination. The use of contrast echo can help also to identify this phenomenon with bubble filling visualization of the intra-atrial mass. The power Doppler filling of the mass (testifying blood circulation) is also in favour of LAA invagination. Cardiac MRI with black-blood fast spin echo MRI with and without fat saturation can demonstrate the presence of fat into the lesion. In addition, protrusion of the left atrial wall into the lumen can be observed near the LAA during diastole on steady-state cine MRI confirming the diagnostic of LAA invagination.

In our case, MRI was not technically feasible with patient in unstable haemodynamic state and tamponade.

In conclusion, the association of left intra-atrial mass with pericardial effusion in a context of post-CABG should lead to exclude first the diagnosis of left atrial invagination before to consider it as an intra-atrial thrombus even in the presence of recent atrial fibrillation.

Supplementary data
Supplementary data are available at European Journal of Echocardiography online.

References

