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INTERMEDIATE

CASE REPORT: CLINICAL CASE

A Misleading Left Atrial Appendage

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ABSTRACT

Left atrial appendage collapse is a relatively unusual echocardiographic finding. Although in post-cardiac surgery patients it may be an early sign of cardiac tamponade, and pericardiocentesis should be discussed, a conservative approach may be followed in cases secondary to viral infection without confusing it with a left atrial appendage thrombus. (**Level of Difficulty: Intermediate.**) (J Am Coll Cardiol Case Rep 2023;15:101872) © 2023 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

HISTORY OF PRESENTATION

A 65-year-old woman was admitted to the hematology department of our university hospital with 2 days of high fever and upper respiratory infection symptoms. She presented with dyspnea, satisfactory oxygen saturation, and no signs of congestion. There were no clinical or biological signs of dehydration and no signs of hypotension or hypoperfusion. Clinical examination revealed a slight bilateral decrease in respiratory murmur and normal heart sounds with tachycardia.

LEARNING OBJECTIVES

- To be able to recognize LAA collapse, a relatively unusual echocardiographic finding, and not confuse it with LAA thrombus.
- To not always consider LAA collapse as an early sign of cardiac tamponade as in patients after cardiac surgery but propose a watchful waiting strategy.

MEDICAL HISTORY

The patient had a long history of anaplastic lymphoma kinase–negative anaplastic large-cell lymphoma with peritoneal and bone metastases. The last course of chemotherapy (brentuximab vedotin) was performed 1 month earlier, and the evolution was considered stable. No pericardial effusion had been detected previously during her monitoring.

DIFFERENTIAL DIAGNOSIS

The possible clinical scenarios discussed were a respiratory microbial infection, a viral infection (especially COVID-19), and a relapse of lymphoma.

INVESTIGATIONS

A complete blood count was conducted and inflammation markers were measured, revealing an infection pattern. A polymerase chain reaction test confirmed the diagnosis of COVID-19. Electrocardiography showed light sinus tachycardia with

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ABBREVIATIONS AND ACRONYMS

LAA = left atrial appendage

TEE = transesophageal echocardiography

TTE = transthoracic echocardiography

relatively microvoltage. Thorax radiography excluded bacterial infection and revealed small pleural bilateral effusions.

Transthoracic echocardiography (TTE) revealed normal cardiac function with a moderate circumferential pericardial effusion of 12 mm, without echocardiographic signs of tamponade (there was no right ventricle collapse, and the inferior vena cava was compliant and measured 14 mm). During follow-up, transesophageal echocardiography (TEE) was performed because of blood cultures positive for *Staphylococcus aureus*, with a view toward excluding infective endocarditis. TEE revealed a left atrial appendage (LAA) collapse (Videos 1 to 3, **Figure 1**) but without signs of tamponade in the left and right ventricles on TTE.

MANAGEMENT

There were no other Duke criteria for the diagnosis of infective endocarditis, and positive blood cultures were attributed to a peripherally inserted central catheter line infection. The pericardial effusion was therefore attributed to COVID-19. The presence of a thrombus within the LAA was discussed in the prothrombotic context of COVID-19 and because the LAA was fairly mobile while collapsed. This diagnosis was refuted. The patient was treated for COVID-19 with nirmatrelvir and ritonavir and antibiotics for blood culture positive for *S aureus*, and the peripherally inserted central catheter line was removed.

FOLLOW-UP

The patient improved clinically, her fever subsided from the third day of treatment, and she was discharged after 7 days of hospitalization. Transthoracic echocardiographic monitoring confirmed regression of the effusion, no pericardiocentesis was performed, and final TTE, performed 3 months later, showed disappearance of the pericardial effusion. No TEE was performed during follow-up, because of the unfavorable benefit/risk ratio.

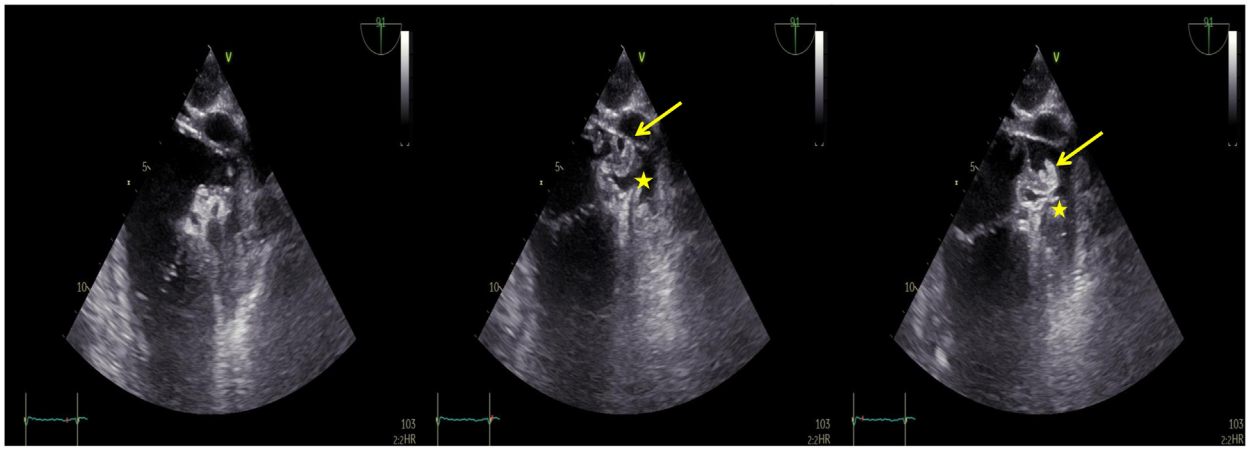
DISCUSSION

Pericardial effusion is a common finding during viral diseases such as COVID-19,[1] especially in immune-depressed patients. LAA collapse is a situation commonly described in patients early or late after cardiac surgery.[2,3] All cases in the literature reported this echocardiographic sign as an early sign of regional tamponade requiring pericardiocentesis.[4] Interestingly, in our case, the LAA collapse was not related to cardiac surgery but to a severe acute respiratory syndrome coronavirus-2 infection, which is rarely found on TEE, as it is not routinely performed in such patients. In addition, as the nature of the effusion was not hemorrhagic, it should not be considered a sign of early cardiac tamponade, and it does not require drainage if the left and right ventricles are not compressed. Finally, because the LAA is mobile when it is collapsed, the clinician must not interpret this image as a thrombus (**Figure 2**).

FIGURE 1 Left Atrial Appendage Collapsing During Cardiac Cycle From Pericardial Effusion Without Signs of Ventricular Tamponade

Yellow arrows denote left atrial appendage collapse, and **yellow stars** denote pericardial effusion.

FIGURE 2 **Left Atrial Appendage Collapsing During Cardiac Cycle From Pericardial Effusion Mimicking Thrombus**



Yellow arrows denote left atrial appendage collapse, and **yellow stars** denote pericardial effusion.

CONCLUSIONS

LAA collapse is a relatively unusual echocardiographic finding. Although in post-cardiac surgery patients, it may be an early sign of cardiac tamponade, and pericardiocentesis should be discussed, a conservative approach may be followed in cases secondary to viral infection without confusing it with an LAA thrombus.

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KEY WORDS echocardiography, imaging, tamponade

APPENDIX For supplemental videos, please see the online version of this paper.