Cardiology and Angiology: An International Journal

Volume 12, Issue 3, Page 90-95, 2023; Article no.CA.99227
ISSN: 2347-520X, NLM ID: 101658392

Giant Left Atrial Appendage Aneurysm or Pericardial Effusion: A Misleading Appearance on Echocardiography and a High Risk of Rupture

Saloua El-Karimi [a], Joumana Elmasrioui [a*], Youssef Islah [a], Mohammed Eljamili [a], Mustapha Elhattaoui [a], Oualid Benfaddoul [b], Warda Chaja [b] and Hicham Jalal [b]

[a] Department of Cardiology, Mohammed VI University Hospital, Marrakesh, Morocco.
[b] Department of Radiology, Mohammed VI University Hospital, Marrakesh, Morocco.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/CA/2023/v12i3329

Open Peer Review History:
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/99227

Case Report

Received: 26/02/2023
Accepted: 29/04/2023
Published: 03/05/2023

ABSTRACT

Left atrial appendage (LAA) aneurysm or giant LAA is an uncommon condition. It could be discovered incidentally during echocardiography examination or in symptomatic patients presenting with tachycardia or embolic events. The giant LAA is a serious condition with a high embolic risk that can cause respiratory distress and even cardiac arrest in children. A conservative surgical approach based on resection of the LAA is recommended and is mostly safe. We report the case of a four-year-old girl presenting with a symptomatic giant LAA removed successfully. The echo-cardiographer must be aware of its appearance mimicking a pericardial effusion and focus on its possible association with other congenital lesions. There are several therapeutic strategies, all with proven efficacy and safety.

**Corresponding author: E-mail: j.elmasrioui@gmail.com;*

Keywords: Giantleft atrial appendage aneurysm; pericardial effusion; echocardiography.

1. INTRODUCTION

Left atrial appendage aneurysm (LAAA) is a usual condition. Sometimes described as a “fifth chamber” [1], It was first described by Dimond et al in 1960 [2,3]. LAAA may be congenital: related to the dysplasia of the cardiac musculature, or acquired: complicating a mitral valve disease [4]. Most cases are reported in adults and the LAAA in infant is quite rare [5]. In general, the discovery is incidental and the patients could be asymptomatic. However, in some cases symptoms occur, including dyspnea, chest pain, supraventricular tachycardia, embolic events, and heart failure. The diagnosis is based on imaging which is fundamental in particular transthoracic echocardiography (TTE), multi-modal imaging, cardiac magnetic resonance imaging (MRI), 3D reconstructions and thoracic computed tomography (CT) scan are of great help in determining the limits, the exact measurements and the anatomical relationships with the surrounding organs [6]. In this report, we describe the case of an infant presenting with a symptomatic left atrial appendage aneurysm (LAAA) initially mistaken for pericardial effusion.

2. CASEPRESENTATION

A four-year-old female non consanguineous infant with no past medical history, presenting dyspnea and chest pain one month before her admission. Chest X-ray was realized demonstrating an enlargement of cardio-thoracic index. She, then, underwent fast-echocardiography revealing a large pericardial effusion lateral to the left ventricle. She was, therefore, referred to our cardiology center. Physical examination found a heart rate at 105 beats per minute, a blood pressure of 87/42 mmHg, no fever, normal cardiac and lung auscultation. Her electrocardiogram (EKG) found a sinus rhythm.

She under-went TTE (Fig. 1) during that initial visit which revealed:

1. severe left atrial enlargement (LA volume of41 mL/m^2),
2. dysplasic mitral valve leaflets without significant regurgitation nor stenosis; large extrinsic structure of antero-lateral location hypoechoic infringing against the left ventricle(80x87x72mm) with spontaneous intra-structural contra stand without constituted thrombus (Figs. 1-2).
3. No hemodynamic repercussions or respiratory variations.

A subsequent chest X-ray showing an anterior overlying structure on the left ventricle (Fig. 2(A)). Also, cardiac CT angiogramidentified a markedly enlarged LAA causing mass-effect on the basal anterior and lateral walls of the left ventricle (Fig. 2 (B+C)).

The patient was referred for a cardiothoracic surgery evaluation. We suggested a conservative treatment strategy given the risk of embolic events, rupture strangulation and compression and adiastolia.

Therefore, surgery was recommended. The patient underwent a median sternotomy and LAA resection with cardiopulmonary bypass. The LAA was large and was excised just above the attachment to the left atrium. No defect, nor pericardium effusion were identified indicating that the mass represented an intrapericardial left atrial appendage aneurysm (LAAA). Her post-operative course was uncomplicated, the patient is still in follow up, with risk of developing supra-ventricular tachycardia.

3. DISCUSSION

Giant LAA or aneurysms are unusual, especially in pediatric population. Mostly discovered at the second and third decade of life, and occurs more frequently in females [7]. Giant LAA could be acquired or congenital.

The genesis of congenital giant LAA is mainly due to a dysplasia of the pectineal muscle at the entrance of the atrium. Moreover, the acquired giant LAA is mainly related to conditions elevating the atrial pressure in the left atrium particularly the mitral valve disease and myocarditis generating a weakening of the atrial wall [8].

LAA aneurysms can present with catastrophic events such as stroke or other systemic emboli. However, in most cases the giant LAA is discovered incidentally. Symptoms mostly found are palpitations related to supraventricular tachycardias, chest pain, shortness of breath, and rarely embolic events that are considered a severe complication. Moreover, the patients might present symptoms of heart failure [9].

The first line diagnostic tool is the TTE, specifically the subxiphoid view. Trans-esophageal echocardiogram, cardiac CT scan, or cardiac MRI, allow the diagnosis, the search for complications and allow toidentify the anatomical relations to the surrounding organs [8].

Congenital aneurysms are typically associated toan enlargement of the left atrium. Two types are described: intrapericardial giant LAA or extra pericardial giant LAA. The extrapericardial is associated to a pericardial defect with a herniated portion of the atrial appendage and atrial wall [10].

In our case, the absence of significant mitral valve disease or other cardiac pathologyis probably related to a congenital giant left atrial appendage (LAA) in its intrapericardial form.

The general recommendation for the management of left atrial appendage aneurysm (LAAA) is surgical excision. The three commonly described aneurysmectomy approaches are via a midline sternotomy, left thoracotomy, andmini-thoracotomy [11].

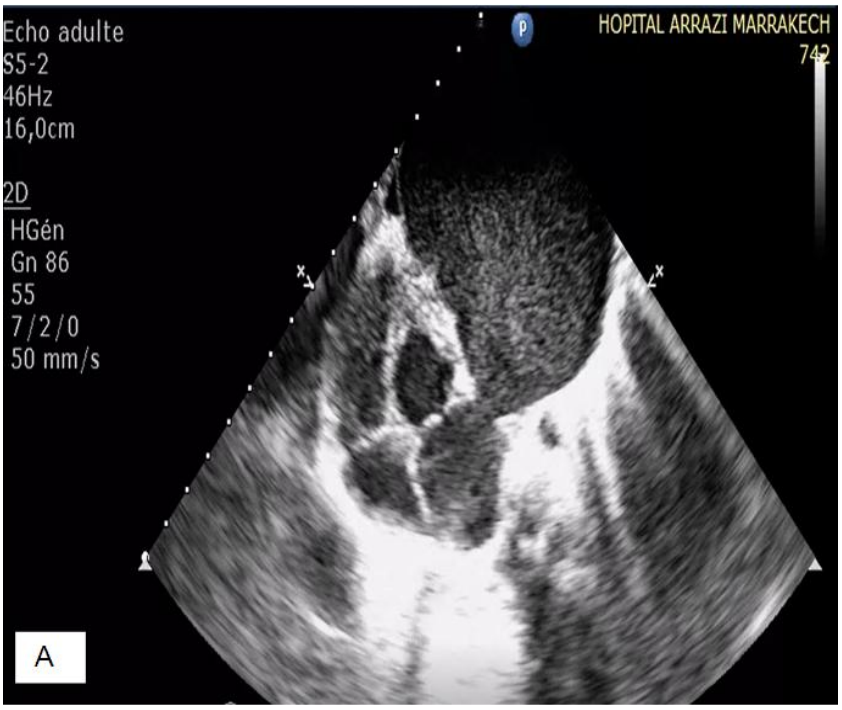
Given the aneurysm's size, the presence of other cardiac defectsor thrombus, the heart team decides on the therapeutic strategy.

Surgical excision with median sternotomy and cardiopulmonary bypass, aortic cross-clamping, and surgical resection of the aneurysm with left atrial reconstruction is the mainly used approach. Other less invasive techniques could be suggested in smaller giant LAA [12].

Conservative approaches may be an optional strategy for certain patients without intra-atrial thrombi in the symptom-free period, especially with a small LAA aneurysm detected incidentally [13].

Medical management is directed toward the treatment of thromboembolism and atrial tachyarrhythmia [14].

Inourcase, thedecision of the surgical approach was based on the mechanical complications arising from the LAA size and risk of strangulation, hemodynamic complications such as impairing the relaxation/filling of the left ventricle, and the significant risk of systemic embolization.



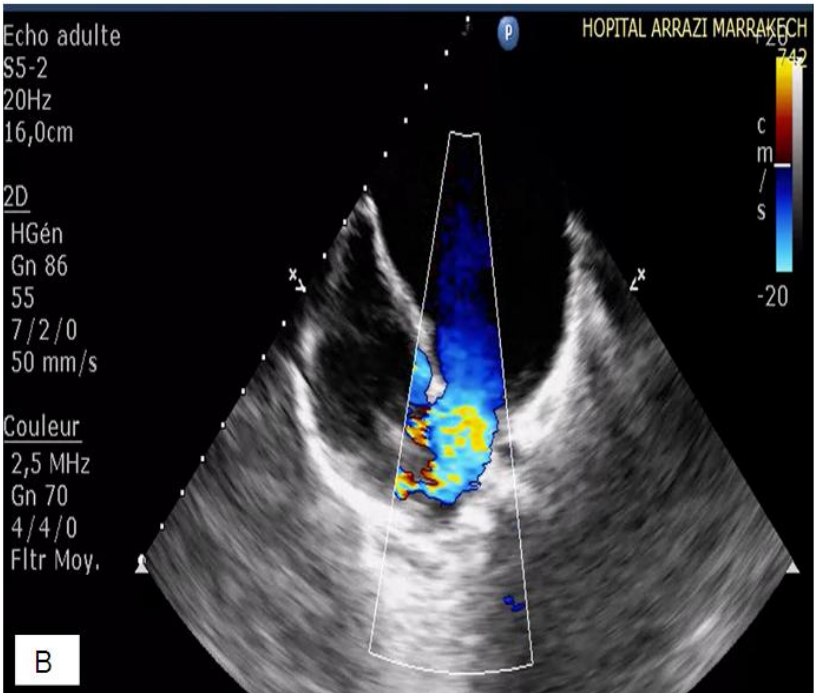
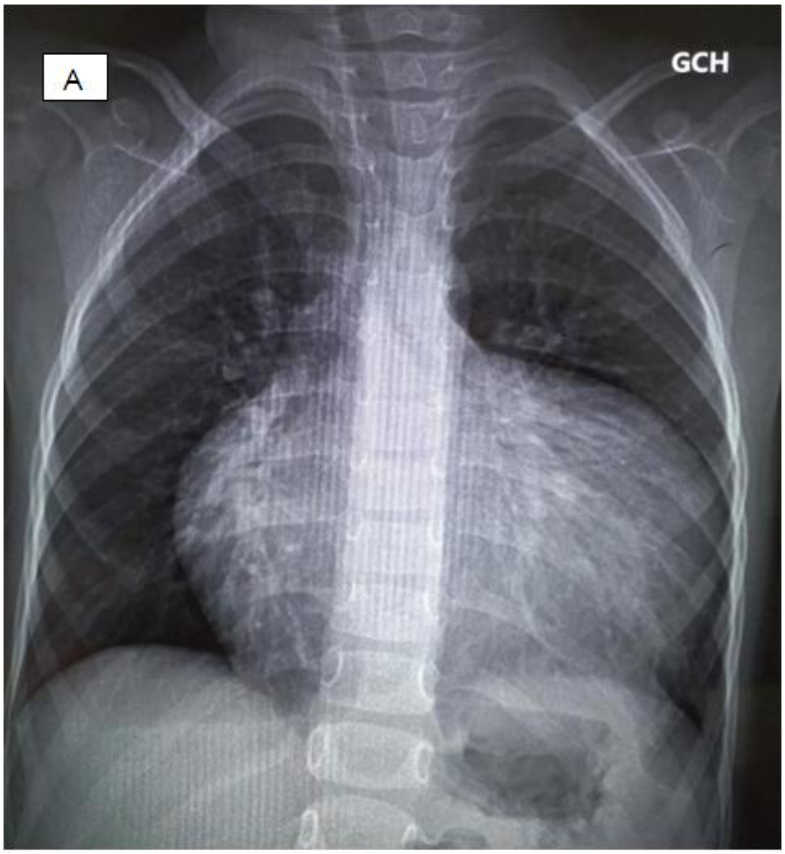


Fig. 1. Four chamber viewshowing: largeextrinsic structure of antero-lateral location hypoechoic infringing against the left ventricle with spontaneous intra-structural contrast (A), The cystic structure is in communication with the left atrium suggestive of a giant LAA (B)



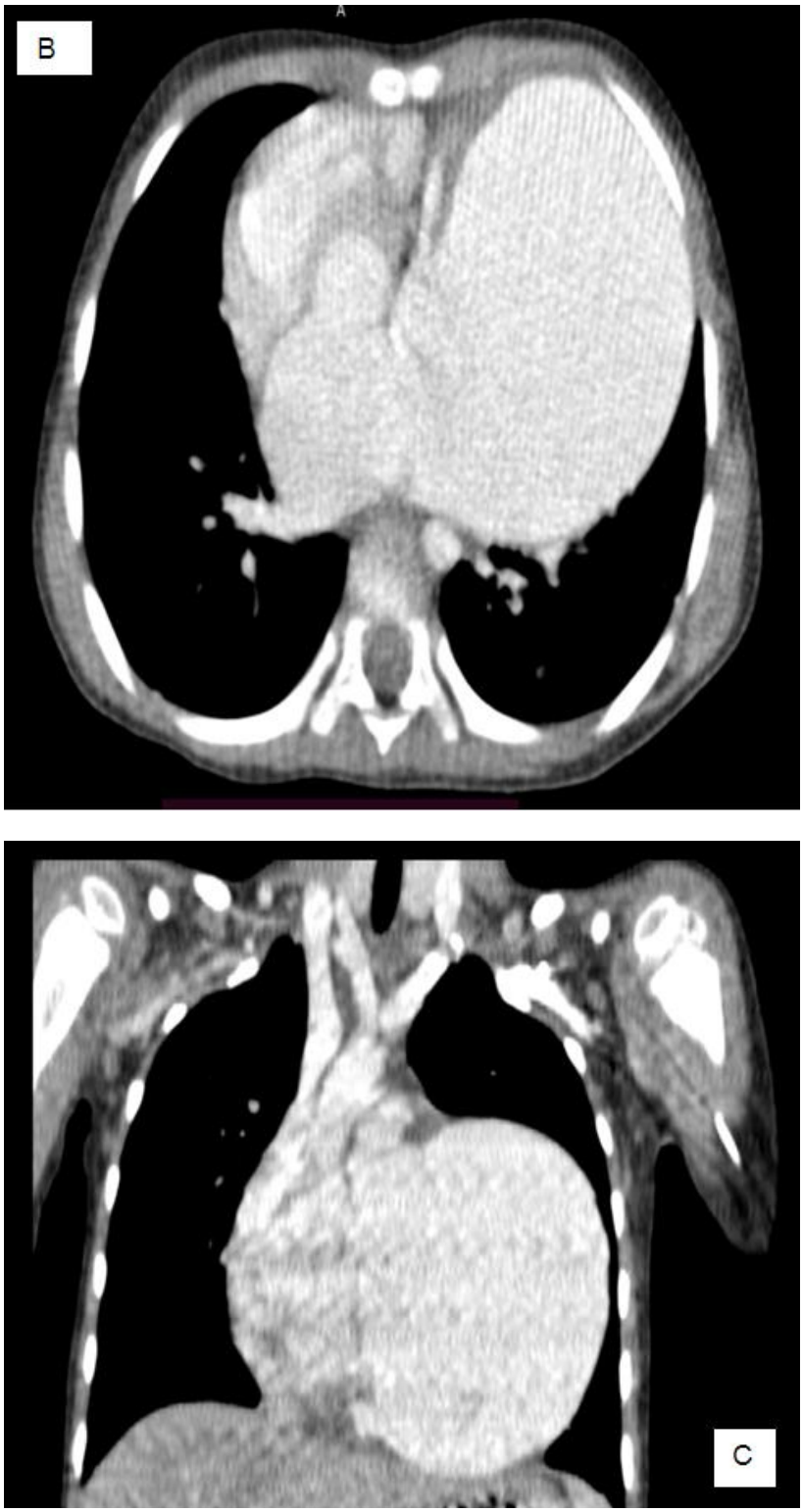


Fig. 2. Cardiomegaly with a structure superimposed on the left ventricle (A), Chest CT scan showing a giant LAA measuring 80x87x72mm(B)+(C)

4. CONCLUSION

Our case demonstrates, that at an early age, the giantleft atrial appendage (LAA) might be symptomatic, and that the main differential diagnosis is pericardial effusion. The therapeutic decision must be made carefully, taking into consideration the clinical and echocardiographic parameters to a better management.

CONSENT

As per international standard, parental written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Valentino MA, Al Danaf J, Morris R, Tecce MA. Giant left atrial appendage aneurysm: A case of mistaken identity. Journal of Cardiology Cases. 1 avr 2017;15(4): 129‑31.
2. Dimond EG, Kittle CF, Voth DW. Extreme hypertrophy of the left atrial appendage: The case of the giant dog ear∗. American Journal of Cardiology. 1 janv 1960;5(1): 122‑5.
3. Cuenca Castillo J. Left Atrial Appendage Aneurysm: Knowledge and Gaps∗. JACC: Case Reports. 15 déc 2021;3(18):1930‑1.
4. Victor, Solomon, and Vijaya M. Nayak. Aneurysm of the left atrial appendage. Texas Heart Institute Journal. 2001; 28.2:111.
5. Rawtani, Sanjog. Giant Left Atrial Appendage Aneurysm in an Infant. World Journal for Pediatric and Congenital Heart Surgery. 2021;12(1):131-132.
6. Hafez, Mona, Shaimaa Rakha, and Donia Mohamed Sobh. Multi-Modal imaging of a Large-sized Right Atrial Appendage Aneurysm in Infancy. Journal of Cardiovascular Imaging. 2022;30(1):92.
7. Aryal, Madan Raj, et al. Left atrial appendage aneurysm: a systematic review of 82 cases. Echocardiography. 2014; 31(10):1312-1318.
8. Li, Meng, et al. Giant left atrial appendage aneurysm compressing the left ventricular wall diagnosed by multiple imaging technology. Cardiology Journal. 2019; 26(4):416-41
9. Li, Rui, et al. Case report: giant congenital left atrial appendage aneurysm presenting with acute massive cerebral infarction and refractory atrial fibrillation: A case report and literature review. Frontiers in Cardiovascular Medicine. 2022;9.
10. Zhang, Xin, et al. Left atrial appendage aneurysm in pediatrics. Echocardiography. 2020;37(6):917-921.
11. Foale RA, Gibson TC, Guyer DE, Gillam L, King ME, Weyman AE. Congenital aneurysms of the left atrium: Recognition by cross-sectional echocardiogra-phy. Circulation. 1982;66:1065–9.
12. DeBose-Scarlett, Alexandra, Mark Hardin, and Melissa M. Levack. Minimally invasive resection of a giant left atrial appendage aneurysm. JTCVS Techniques. 2022; 16:219-222.
13. Chen Y, Mou Y, Jiang LJ, Hu SJ. Congenital giant left atrial appendage aneurysm: A case report. Journal of Cardiothoracic Surgery. 16 mars 2017;12(1):15.
14. Aryal MR, Hakim FA, Ghimire S, Ghimire S, Giri S, Pandit A, et al. Left Atrial Appendage Aneurysm: A Systematic Review of 82 Cases. Echocardiography. 2014;31(10):1312‑8.

Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle5.com/review-history/99227