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CASE REPORT

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A rare case of an intramyocardial mesothelial inclusion cyst

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Abstract

A symptomatic intramyocardial cyst, whilst a rare occurrence, is most effectively investigated using Magnetic Resonance Imaging. Furthermore, following diagnosis it can be effectively treated using a surgical approach.

KEYWORDS

cardiac cyst, cardiac magnetic resonance imaging

1 | INTRODUCTION

Intramyocardical Mesothelial Cysts are rarely reported in literature. We present such a case in a 59-year-old female patient, who presented with shortness of breath and palpitations. The imaging modalities used to aid diagnosis and operative management, which resulted in symptomatic relief, are detailed and reviewed. Intramyocardial cysts are a rare presentation and, therefore, are rarely reported in literature. Patients can present with a variety of symptoms and require multiple imaging modalities for investigation.[1] We report a case of a symptomatic patient, who was investigated using multiple imaging modalities and subsequently underwent surgical management, which resulted in a positive outcome.

2 | CASE DESCRIPTION

A 59-year-old woman was investigated for a 2-month history of worsening palpitations and shortness of breath (New York Heart Association class II). The patient's symptoms were exacerbated on exertion, particularly when walking uphill. Initial investigation involved an echocardiogram, which revealed an encapsulated mass on the apical-lateral wall. The echocardiogram also demonstrated that the left ventricular (LV) function and size were normal. The remaining cardiac chambers were of normal size and function, and except for a trace of mitral regurgitation (MR), cardiac valvular function was normal. Following the echocardiogram, a cardiac-gated computed tomography coronary angiography (CTCA) confirmed a left ventricular myocardial cyst measuring approximately 2.5 cm in diameter. A subsequent cardiac-gated magnetic resonance imaging scan (MRI) confirmed an intramyocardial cyst in the inferolateral wall, which was in close association with the insertion of the inferolateral papillary muscle bundle (Figure 1). Given the suspicious nature of the lesion, a computed tomography (CT) scan of the abdomen and pelvis was performed, which was unremarkable for extra-cardiac tumors. A multi-disciplinary consensus was reached in favor of surgical excision of the cyst, thus facilitating a definitive diagnosis as well as aiming to provide symptomatic relief for the patient.

Following a median sternotomy and pericardotomy, the left ventricle was found to be mildly hypertrophied, with preserved function. After the institution of cardiopulmonary pulmonary bypass and aortic cross-clamping, a 3-cm cyst was palpated in the inferolateral myocardium. An incision was then made over the myocardium and the cyst excised using a combination of blunt and sharp dissection with no impact on the papillary muscle. The incision was buttressed between Teflon strips and the remaining myocardial defect closed with a Prolene running suture.

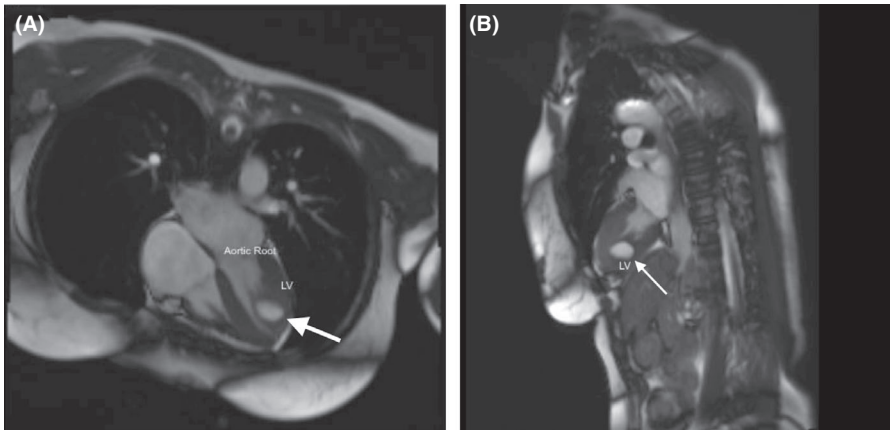

FIGURE 1 Cardiac-gated magnetic resonance imaging: A- Axial 4 chamber view at peak systole, B Sagittal View, demonstrating an intramyocardial cyst in the inferolateral left ventricular wall (white arrow)

A Hemopatch® from Baxter Healthcare Corporation, Germany was then applied to reinforce the incision. The excised cyst from the procedure is shown in Figure 2.

Following excision, histological analysis of the cystic wall demonstrated a thin layer of flattened epithelioid cells lined by collagen fibers. The cyst was devoid of granulomatous and malignant signs.

The patient's post-operative course was uneventful and there were no major complications. On follow-up, the patient's breathlessness had improved significantly and echocardiography revealed a normally functioning heart and no mitral valve compromise.

3 | DISCUSSION

Management of myocardial cysts are rarely reported in literature due to the rarity of their presentation. Although various types exist, one of the least common types are mesothelial myocardial cysts; the type in the case presented above. Mesothelial cysts are usually congenital in origin and unilocular.[1]

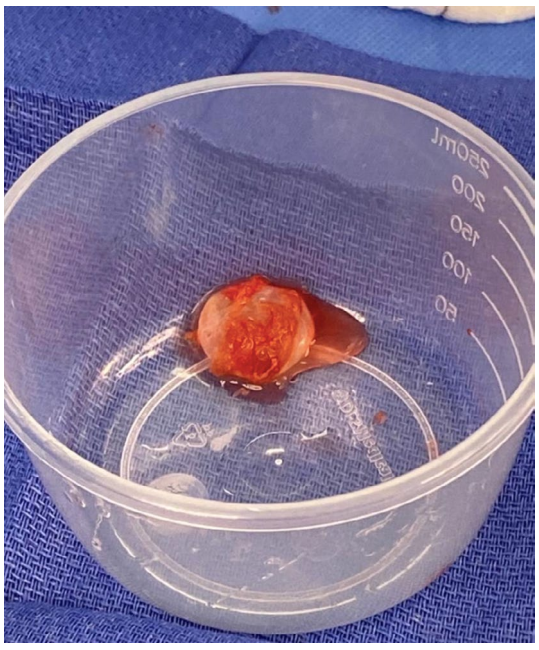

FIGURE 2 Excised Mesothelial Inclusion Cyst

Patients with mesothelial cysts can be asymptomatic or can present with a variety of symptoms. Enlargement of the cyst may lead to compression of adjacent structures, as well as infection and associated bleeding.[1] In the case above, we highlight a symptomatic patient with dyspnea and palpitations, both are symptoms reported in literature, other symptoms reported include chest pain and cough.[1] Although the left ventricular ejection fraction was globally preserved, the symptoms in this case were attributed to the impact of the cyst on ventricular outflow, leading to increased afterload on the heart.[2]

Multiple imaging modalities have a role in the diagnosis of intramyocardial cysts. On echocardiogram, cysts can range from anechoic to hypoechoic, thus delineating, which masses are fluid filled.[3] CT demonstrates the size, shape and location of a cyst, which MRI can also demonstrate. As described in the presented case MRI, can provide additional data on the cystic wall and its contents. Cardiac MRI can either be T1 or T2 weighted and, based on the weighting the signal will be low or high.[3]

Common histological features of mesothelial cysts include either cuboidal, flattened, or mesothelium lining of fibrous walls of loose or collagenous connective tissue. Additionally, pericardial mesothelial cysts can involve other tissue types including adipose or muscle tissue.[4] In the case presented above, histology identified scarred myocardium with collagenous interstitial fibrosis and myocyte drop-out.

The most definitive management for cardiac cysts is surgery; which also helps with diagnosis, as in the case above. Surgical management also aims to prevent complications, the most serious reported include cyst rupture, cardiac tamponade, anaphylaxis, and embolic complications (pulmonary, intracerebral, or peripheral arterial).[5]

4 | CONCLUSION

In conclusion, thorough investigation using multiple imaging modalities can help with the diagnosis of intramyocardial mesothelial cysts and ensuing treatment planning. In this case, we have demonstrated that this can be done effectively with a combination of echocardiogram and MRI. Following diagnosis, we have demonstrated that intramyocardial mesothelial cysts can be treated safely and effectively with surgery.

CONFLICT OF INTEREST

No Conflicts of Interest.

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AUTHOR CONTRIBUTIONS

Shehani Alwis—Involved in concept/design, drafting article, and critical revision of article. Mohammad Y. Salmasi—Involved inconcept/design, drafting article, and critical revision of article. Shahzad G. Raja—Involved in concept/design, drafting article, and critical revision of article.

ETHICAL APPROVAL

All authors contributed to the final version of this manuscript and can confirm this has not been published elsewhere. Consent was obtained from the patient and the manuscript contains no identifiable details.

CONSENT

Signed informed consent was obtained from patient for surgery and publication of the report without patient identifiable information.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data was created or analyzed in this study.

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