Massive intrapericardial cyst: A rare cause of chronic cough

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Abstract
We present a unique case of massive intrapericardial cyst manifesting as chronic cough, which highlights the unique presentation of this rare condition. Although uncommon, intrapericardial cyst should be considered in cases of chronic, non-productive cough, especially in the absence of lung pathology. The role of multi-modality imaging remains essential for early detection of the condition and monitoring for potential complications.

Keywords
Cardiac magnetic resonance imaging, congenital anomaly, case report, pericardial cyst, intrapericardial cyst

Introduction
Pericardial cysts are the third commonest mediastinal mass but remain rare as a whole (incidence of 1/100,000). They are often benign and asymptomatic, and are likely detected incidentally between the third and fifth decade of life. Uncommonly, patients can develop chest pain or dyspnoea. We present a unique case of massive intrapericardial cyst manifesting as chronic cough.

Case presentation
A 66-year-old woman presented to our cardiology outpatient following a three-year history of a progressively worsening dry cough. She had well-controlled diabetes (haemoglobin A1C levels 7.0%) and hypertension, both of which were diagnosed more than 10 years ago. Her vital signs at presentation were stable, with a blood pressure of 138/78 mmHg, pulse rate of 82 bpm and oxygen saturation of 96% performed on room air. Clinical examination revealed mild peripheral, pitting oedema. There was reduced air entry on the right lower zone on examination of the chest and evidence of ascites clinically. Heart sounds were audible, albeit soft, and there were no audible murmurs.

Urinalysis revealed an absence of albuminuria and proteinuria. Initial blood tests were not indicative of either nephrotic syndrome or chronic liver disease. A chest radiograph revealed blunting of the right costophrenic angle, indicative of pericardial effusion and evidence of cardiomegaly. A transthoracic echocardiography (TTE; Figure 1) was performed, revealing a hyperechoic structure within pericardium cavity at the lateral wall of the left atrium and ventricle, suggestive of a mass with minimal circumferential pericardial effusion (the largest being 0.6 cm). The left ventricular ejection fraction was 62%, and aside from biatrial dilatation, intracardiac structures were otherwise unremarkable. Subsequent cardiac magnetic resonance (CMR) imaging was performed (Figure 2), revealing a well-defined mass within the intrapericardial cavity in the left side of the heart, encroaching the inferior part of the right ventricle and inferior and lateral left ventricle with a vertical orientation from the base of the heart to the apex measuring approximately 10 cm×4 cm (the largest horizontal diameter). There was compression at the basal lateral wall of the left ventricle. However, there was no extension into any of the major vessels or neighbouring structures, with only minimal pericardial effusion at the basal wall. The mass was hyperintense on T1-, and heterogenous on T2-weighted turbo spin-echo.

Computed tomography imaging of the thorax, abdomen and pelvis confirmed the presence of the intrapericardial soft-tissue mass (35–60 HU), with no other masses or tumours. A provisional diagnosis of complex, proteinaceous pericardial cyst was made, and the patient was counselled for surgical aspiration and resection, for both diagnostic and therapeutic benefits. Unfortunately, the patient declined surgical
intervention, but opted instead for closer monitoring under our care.

Discussion

Pericardial cysts are rare congenital anomalies, often benign and asymptomatic in nature.\(^2\)\(^3\) However, there have been cases of sporadic pericardial cyst development in the literature.\(^4\) Pericardial cysts are either extrapericardial (pleural based and likely to cause respiratory symptoms) or intrapericardial (within the pericardial sac).\(^5\) Our case highlights a unique presentation of this rare condition, as respiratory symptoms in intrapericardial cysts are rare, mainly due to the compressive effects onto neighbouring respiratory structures. To our knowledge, this is the fourth case evident in literature with the initial presentation being that of a cough.\(^6\)\(^7\)\(^8\)

Pericardial cysts often vary in size and location, most commonly appearing near the right costophrenic angle (70%) or

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**Figure 1.** Transthoracic echocardiography at (a) parasternal long-axis, (b) apical four-chamber and (c) subcostal planes illustrating a hyperechoic structure within the pericardial cavity at the lateral wall of the left atrium and ventricle.

**Figure 2.** Cardiac magnetic resonance imaging via (a) four-chamber and (b) two-chamber planes illustrating a well-defined heterogenous mass within the pericardial cavity on the left side of the heart, with a vertical orientation from the base of the heart to the apex measuring approximately 10 cm × 4 cm. The mass also encroaches on the inferior part of the right ventricle and inferior and lateral left ventricle (not shown). There is also evidence of right-sided pleural effusion and bialtrial dilatation.
left heart border (20%) like in our case. Various complications may occur, including cysts rupturing, leading to compression of the neighbouring structures (i.e. cardiac tamponade, airway obstruction), arrhythmias and left- or right-sided heart failure. Although asymptomatic patients may be monitored with serial TTEs, most patients exhibiting symptoms or complications or those at risk of enlargement merit consideration for intervention – through either aspiration or surgical resection of the mass. Although void of tissue diagnosis, in view of well-controlled risk factors and absence of other possible causes for her fluid retention, our patient's condition was most likely due to the massive pericardial cyst caused by compressive symptoms.

Conclusion

Although rare, pericardial cysts should be considered in cases of a chronic, non-productive cough, especially in the absence of lung pathology. The role of multi-modality imaging, including both echocardiography and CMR, remains essential for the early detection of the condition and monitoring for potential complications, and guides the need for invasive intervention.

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Authors' contributions

R.S. undertook the data collection and analysis, and drafted the manuscript. S.K. drafted and revised the manuscript.

Availability of data and materials

The data that support the findings of this study are available from UiTM Sungai Buloh, but restrictions apply regarding the availability of these data, which were used under license for the current study and so are not publicly available. Data are, however, available from the authors upon reasonable request and with permission of UiTM Sungai Buloh.

Ethical approval

Ethical approval to report this case was obtained from the Universiti Teknologi MARA (UiTM) Ethics Committee.

Informed consent

Written informed consent was obtained from the patient(s) for their anonymised information to be published in this article.

Conflict of interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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