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Case Report

Intrapericardial Solitary Fibrous Tumor Unmasked by Life-threatening Cardiac Tamponade: A Case Report

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Abstract

Background: Solitary fibrous tumors (SFTs) are rare mesenchymal neoplasms initially described as pleural tumors but now recognized as ubiquitous lesions with variable biological behavior, and intrapericardial SFTs represent an exceptional subset with fewer than a dozen well-documented cases in the literature, their clinical presentation often being nonspecific while life-threatening complications such as cardiac tamponade remain exceedingly rare. Case presentation: A 72-year-old man presented with progressive dyspnea, dry cough, and retrosternal chest pain evolving over three months, culminating in cardiorespiratory distress; clinical examination revealed cardiac tamponade. Echocardiography demonstrated a regular iso-echogenic intrapericardial mass compressing the left cardiac chambers, measuring 12.6 × 9.6 cm, and thoracic CT scan showed a large, well-defined hypodense mass in the anterior mediastinum adjacent to the left cardiac border. A monobloc surgical excision was performed via median sternotomy, and tumor removal resulted in abrupt re-expansion of the cardiac chambers with sudden hypotension requiring fluid resuscitation and vasopressor support. Postoperative evolution was marked by cardiogenic shock on day 1, managed with dobutamine and norepinephrine, followed by progressive improvement allowing discharge on postoperative day 10. Histopathological analysis confirmed an intrapericardial solitary fibrous tumor. Conclusion: Intrapericardial SFTs are extremely rare, complete surgical resection remains the treatment of choice, and long-term imaging follow-up is essential due to the potential for recurrence or malignant transformation.

Keywords

Solitary Fibrous Tumor, Pericardium, Cardiac Tamponade, Mediastinal Tumor, Surgery

1. Introduction

Solitary fibrous tumors (SFTs) are rare mesenchymal neoplasms first described by Klemperer and Rabin in 1931 as "localized mesotheliomas" originating from the pleura [1, 2]. Initially considered exclusively pleural, these tumors were later recognized as ubiquitous lesions capable of arising in virtually

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any anatomical site, leading to their reclassification in modern WHO (World Health Organization) classifications [1]. Histologically, SFTs are characterized by spindle-cell proliferation within a collagenous stroma and a distinctive "patternless pattern." The discovery of the NAB2-STAT6 gene fusion has since become a defining molecular hallmark of SFTs, supporting their unified pathogenesis [3].

Although the pleura remains the most common site, extrapleural SFTs have been reported in the mediastinum, peritoneum, meninges, orbit, and soft tissues [2, 4]. Cardiac and pericardial localizations are exceptionally rare. The first well-documented intrapericardial SFTs were reported in the late 1980s and early 1990s, notably by El-Naggar et al. [5] and Bortolotti et al. [6], who described large benign tumors compressing cardiac structures.

Clinically, intrapericardial SFTs may remain asymptomatic for long periods or present with nonspecific symptoms such as dyspnea, chest pain, or signs of right-sided compression. Life-threatening complications, including cardiac tamponade, are extremely uncommon but have been reported in a handful of cases [2, 7, 8]. Imaging modalities such as echocardiography, CT, and MRI play a central role in detection and characterization, but definitive diagnosis relies on histopathology and immunohistochemistry, particularly STAT6 nuclear positivity [3].

Given the scarcity of reported cases and the potential for malignant transformation or recurrence even after complete resection intrapericardial SFTs warrant careful documentation. We report a case of a large intrapericardial SFT revealed by cardiac tamponade in a 72-year-old patient.

2. Case Presentation

A 72-year-old man, chronic smoker of traditional tobacco and without significant medical history, presented with exertional dyspnea (NYHA class III), dry cough, and retrosternal chest pain evolving over three months. Symptoms occurred in a context of general deterioration, unquantified weight loss, and physical asthenia. The onset of cardiorespiratory distress prompted urgent consultation.

On admission, the patient was hemodynamically unstable: blood pressure 80/54 mmHg, heart rate 102 bpm, oxygen saturation 94%. Heart sounds were muffled and irregular. Breath sounds were decreased bilaterally, while thoracic expansion remained normal. The remainder of the examination was unremarkable. Given the clinical suspicion of cardiac tamponade, the patient was transferred to the intensive care unit for stabilization and urgent evaluation.

Electrocardiogram showed an irregular sinus rhythm (92 bpm), attenuation of R waves in V1–V3, polymorphic ventricular extrasystoles, and low peripheral voltage.

Transthoracic echocardiography revealed a regular iso-echogenic intrapericardial mass compressing the left cardiac chambers, measuring 12.6 × 9.6 cm (LVEF 54%, TAPSE 16 mm, PASP 28 mmHg). Thoracic CT scan demonstrated a large, well-defined hypodense mass in the anterior mediastinum adjacent to the left cardiac border. Laboratory tests, including AFP, were normal.

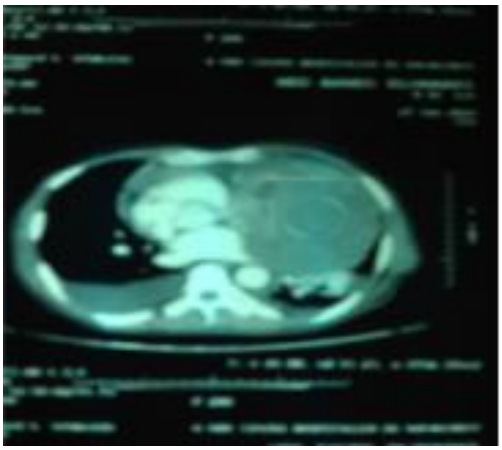

Figure 1. *Thoracic CT angiography showing a mediastinal mass compressing the left cardiac chambers.*

Surgical Management: Median sternotomy revealed a pearly-white, solid, hemorrhagic intrapericardial mass displacing the heart and compressing the left chambers. A monobloc excision was performed. Tumor removal caused sudden re-expansion of the cardiac chambers and abrupt hypotension, requiring aggressive fluid resuscitation and vasopressor support. Accidental opening of both pleural cavities required placement of four drains (two pleural, one pericardial, one retrosternal).

Postoperative echocardiography showed severe left ventricular dysfunction. On postoperative day 1, the patient developed cardiogenic shock requiring dobutamine and norepinephrine, followed by gradual improvement. He was discharged on postoperative day 10.

Histopathological examination confirmed an intrapericardial solitary fibrous tumor.

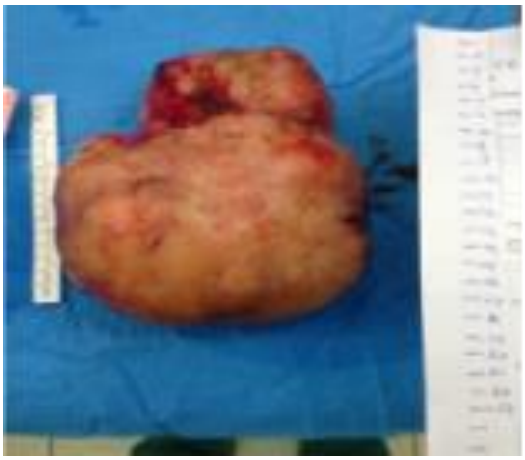

Figure 2. *Surgical specimen of the tumor.*

3. Discussion

Solitary fibrous tumors (SFTs) are rare mesenchymal neoplasms most frequently diagnosed in individuals between 50 and 62 years of age [9]. Although the pleura represents the most common site of origin, extrapleural locations including the mediastinum, pericardium, and peritoneum have been documented [2]. Tumor size typically ranges from 7 to 10 cm, consistent with the dimensions observed in our patient [10].

Intrapericardial SFTs are exceptionally rare. Dyspnea is the predominant symptom due to the mass effect exerted on the heart [5-11]. Additional manifestations may include anemia, precordial pain, and peripheral edema. Only a limited number of cases have been reported in the literature [7, 8], Table 1.

Table 1. The case of pericardial solitary fibrous tumor in other reported cases.

Author	Year	Age	Sex	Malignancy	Tumor size (cm)
El-Naggar et al	1989	56	F	Benign	13
Bortolotti et al	1992	60	M	Benign	14x7
Andreani et al	1998	60	M	Benign	20x18
Shao et al	2019	51	F	Benign	6.8x7.5
Zhang et al	2019	64	F	Maligant	7.5x3.4

Diagnosis relies on multimodal imaging. Echocardiography often reveals a hyperechogenic mass, sometimes containing small calcifications[11]. Magnetic resonance imaging (MRI) typically demonstrates low signal intensity on T1- and T2-weighted sequences, with homogeneous enhancement following contrast administration, reflecting the fibrous composition of the tumor [12, 13].

Histopathological examination remains the gold standard for diagnosis. SFTs are composed of spindle-shaped fibroblasts embedded in collagen, occasionally with calcifications in older lesions. Immunohistochemistry is essential for confirmation, with typical positivity for CD34, CD99, Bcl-2, and STAT-6, and negativity for EMA and S100 [3].

Although most SFTs are benign, malignant variants have been reported. This underscores the importance of complete surgical resection and long-term follow-up to detect recurrence or metastasis.

4. Conclusion

Intrapericardial solitary fibrous tumors are extremely rare. Complete surgical excision is the treatment of choice. Long-term follow-up using computed tomography and magnetic resonance imaging is essential to detect recurrence or malignant transformation.

Abbreviations

SFT	Solitary Fibrous Tumors
CT-scan	Computed Tomography Scan
MRI	Magnetic Resonance Imaging
ECG	Electrocardiogram
LVEF	Left Ventricular Ejection Fraction
TAPSE	Tricuspid Annular Plane Systolic
PASP	Pulmonary Artery Systolic Pressure
NYHA	New York Heart Association
FDG PET/CT	Fluorodeoxyglucose Positron Emission Tomography / Computed Tomography
AFP	Alpha-Fetoprotein
ICU	Intensive Care Unit
WHO	World Health Organization
STAT6	Signal Transducer and Activator

Author Contributions

Abdoul Aziz Thiaw: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Writing – original draft, Writing – review & editing

Souleymane Diatta: Funding acquisition, Project administration, Resources, Supervision, Validation

Ndeye Fatou Sow: Methodology, Software, Validation, Visualization

Pape Amath Diagne: Formal Analysis, Validation, Visualization

Conflicts of Interest

The authors declare no conflicts of interest.

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