

## Cardiac Tamponade of Neoplastic Origin: A Diagnostic Challenge

Maria Jose Santana Cano<sup>1</sup>, Ricardo Jorge Remes Ruiz<sup>1</sup>, Mauricio Enrique Zaragoza Pérez<sup>1</sup>, Carlos Orlando De La Cruz Caseros<sup>1</sup>, Estanislao Antonio Calixto<sup>2</sup>

<sup>1</sup>Department of Internal Medicine. High Specialty Regional Hospital of Veracruz SESVER, Mexico

<sup>2</sup>Department of Clinical Cardiology. National Institute of Cardiology "Ignacio Chávez", Mexico City, Mexico

### ABSTRACT

Cardiac tamponade is a slow or rapid compression of the heart that leads to high mortality rates depending on the etiology. Clinical signs include elevated jugular venous pressure, hypotension, tachycardia and paradoxical pulse. Therefore, a clinical case of cardiac tamponade secondary to metastasis is presented. A 57-year-old woman began her condition with progressive dyspnea with daily activities, non-productive cough, hypotension and tachycardia, global cardiomegaly on chest X-ray and massive pericardial effusion on echocardiogram, and cardiac tamponade. Pericardiocentesis was performed and a left lung lesion was evident on chest CT. Due to recurrence of tamponade, a pathological study was performed that showed metastasis of adenocarcinoma of pulmonary origin. The formation of neoplastic fluid occurred when chemotherapy was applied. Addressing critical aspects of pericardial disease, including diagnosis and differential diagnosis, could improve life expectancy predictions for patients with oncological pathologies.

**KEYWORDS:** cardiac tamponade, pericardium, metastasis of neoplasms

### ARTICLE DETAILS

**Published On:**  
**07 August 2024**

**Available on:**  
**<https://ijmscr.org/>**

### INTRODUCTION

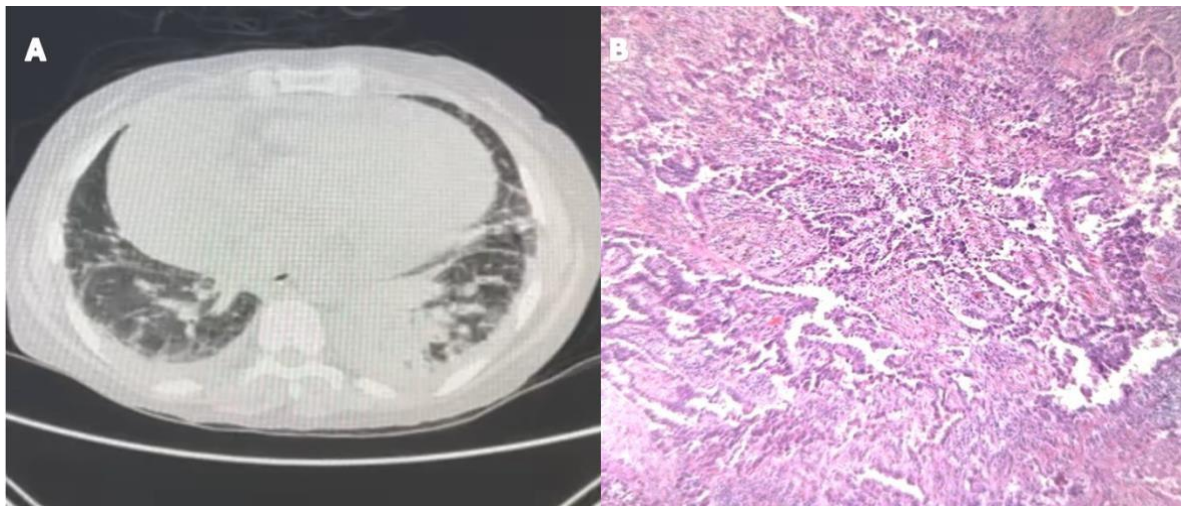
Cardiac tamponade is a slow or rapid life-threatening compression of the heart due to pericardial accumulation of fluid, pus, blood, clots or gas as a result of inflammation, trauma, heart rupture or aortic dissection as primary causes and as secondary causes it is developed by some neoplastic process or presence of autoimmune diseases<sup>1</sup>.

The incidence of cardiac tamponade has been reported in 5 cases per 10,000 admissions in the United States. Clinical signs include elevated jugular venous pressure, hypotension, tachycardia and paradoxical pulse. Cardiac tamponade carries high mortality rates, especially in patients with sepsis, thoracic trauma, metastatic cancer and acute kidney injury<sup>2</sup>. Therefore, a clinical case of cardiac tamponade secondary to metastasis is presented.

### CLINICAL CASE

57-year-old woman with no personal medical history. Her condition began with progressive dyspnea during daily activities, non-productive cough, hypotension and tachycardia. She went to a medical service where global cardiomegaly was documented on chest x-ray and she

received unspecified treatment. The symptoms persisted and she was admitted to the secondary care level where massive pericardial effusion, diastolic involvement of the right cavities and cardiac tamponade were documented on echocardiogram. Pericardiocentesis was performed plus placement of an intrapericardial catheter, obtaining fluid with characteristics of blood exudate. She presented recurrence of the formation of the fluid. A study of pericardial fluid was performed with a report of blood characteristics, with proteins of 4000, positive pap smear for neoplastic cells suggestive of carcinoma, ziel-neelsen stain and negative PCR for tuberculosis. Chest CT scan (Fig. 1A) showed massive pericardial effusion and left lung lesion. Due to recurrence of cardiac tamponade, a pericardial window and pericardial biopsy were performed. The pathology report (Fig. 1B) showed metastasis of adenocarcinoma of pulmonary origin. After the pericardial window, the patient presented massive left pleural effusion and respiratory symptoms that required implantation of an endopleural tube. The formation of neoplastic fluid subsided with the application of chemotherapy.



**Figure 1. A) Plain chest CT scan showing massive pericardial effusion, minimal left pleural effusion, and left lung lesion. B) The pathological report showed fibroconnective tissue infiltrated by malignant epithelial neoplasia, and the immunohistochemical study showed metastasis of adenocarcinoma of pulmonary origin.**

### DISCUSSION

In a patient with a known pericardial effusion, clinical examination can help guide decisions about the convenience of expectant treatment or more urgent invasive intervention<sup>3</sup>. In this clinical case, recurrent and massive pericardial effusion was presented, which caused cardiac tamponade. According to the guidelines, the first-line treatment is pericardiocentesis. As the recurrence of the effusion and diastolic failure persist, a diagnostic and therapeutic pericardial window should be performed<sup>4</sup>. Immunohistochemistry confirmed the presence of pulmonary adenocarcinoma metastasis. The incidence of malignant pericardial effusion is 10 to 21% according to the literature, so most are diagnosed postmortem<sup>5</sup>.

The development of pleural effusion has been described in the first 24 to 48 hours after the pericardial window was performed, although the effusion subsided until the application of chemotherapy.

### CONCLUSION

Pericardial effusions can occur in a variety of clinical situations and often pose difficult clinical and therapeutic challenges. Addressing critical aspects of pericardial disease,

including diagnosis and differential diagnosis, could improve the life expectancy of patients with oncologic conditions.

### REFERENCES

- I. Echocardiography in the intensive care (ICU). European Association of cardiovascular imaging 2019.
- II. Al-ogaili, Ayoub A, Fugar S. Cardiac tamponade incidence, demographics and in-hospital outcomes: analysis of the national inpatient sample database. *JACC*. 2018 mar, 71 (11\_supplement) a1155.
- III. Roy CL, Minor MA, Brookhart MA, Choudhry NK. Does this patient with a pericardial effusion have cardiac tamponade? *JAMA*. 2007 Apr 25;297(16):1810-8.
- IV. Maisch B, Seferovic PM, Ristic AD, Erbel R, Rienmüller R, Adler Y, et al. Guía de practica clínica para el diagnóstico y tratamiento de las enfermedades del pericardio. Versión resumida. *Rev Esp Cardiol*, 2004.
- V. Yamani N, Abbasi A, Almas T, Mookadam F, Unzek S. Diagnosis, treatment, and management of pericardial effusion- review. *Ann Med Surg (Lond)*. 2022;80.