

# Cardiac tamponade as the first manifestation of lung cancer

## Abstract

**Background:** The incidence of metastatic disease in the myocardium and/or pericardium ranges from less than 1 percent to 18 percent of all cancer patients and varies depending on the type of malignancy. The signet ring cell pattern corresponds to an aggressive behavior of the neoplasia, with a 5-year survival of 50%.

**Case presentation:** A 47-year-old woman, a smoker of 20 hashish cigarettes a day since she was 22, who attended the emergency department with a 48-hour history of diffuse abdominal pain with dyspneic sensation and coughing spells without expectoration. A posteroanterior chest radiograph showed a greatly increased cardiothoracic index. The echocardiogram reported the presence of a large pericardial effusion, with a 4-centimeter separation of both pericardial sheets with diastolic collapse of the right atrium and right ventricle. Given the clinical picture of the patient, admission to the Intensive Care Unit was decided, where pericardiocentesis was performed, extracting 2 liters of blood fluid with a hematocrit of 50%. After 48 hours of monitoring, the patient was admitted to Internal Medicine.

**Conclusions:** We present a patient with a cardiac tamponade whose cytology revealed adenocarcinoma with a signet ring cell pattern without being able to define the origin of the neoplasm.

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## Case report

A 47-year-old woman, a smoker of 20 hashish cigarettes a day since she was 22, who attended the emergency department with a 48-hour history of diffuse abdominal pain with dyspneic sensation and coughing spells without expectoration. On physical examination, he presented blood pressure of 90/60 mmHg, increased jugular venous pressure up to the submandibular angle, rhythmic heart tones with a frequency of 140 beats per minute (bpm). An electrocardiogram was performed in which he presented sinus tachycardia at 140 bpm and low voltages. A posteroanterior chest radiograph showed a greatly increased cardiothoracic index. The echocardiogram reported the presence of a large pericardial effusion, with a 4-centimeter separation of both pericardial sheets with diastolic collapse of the right atrium and right ventricle.

Given the clinical picture of the patient, admission to the Intensive Care Unit was decided, where pericardiocentesis was performed, extracting 2 liters of blood fluid with a hematocrit of 50%. After 48 hours of monitoring, the patient was admitted to Internal Medicine. Pericardial fluid cytology revealed adenocarcinoma with a signet ring cell pattern without being able to define the origin of the neoplasm; Mammography and bilateral breast ultrasound were performed with findings compatible with right mammary fibroadenoma. A gastroscopy is performed where no tumor is seen, taking samples for biopsy that are negative for malignancy. A CT scan of the chest, abdomen, and pelvis showed evidence of a solid spiculated intrapulmonary nodule suggestive of a primary neoplasm in the right upper lobe with multiple pathological adenopathies at the mediastinal and right hilar level. Ultrasound bronchoscopy was performed, taking samples of adenopathies with which it was verified that it was a metastatic mucinous lung adenocarcinoma, performing an immunohistochemical study, staining positive for TTFI and CDX2.

## Discussion

The incidence of metastatic disease in the myocardium and/or pericardium ranges from less than 1 percent to 18 percent of all cancer patients and varies depending on the type of malignancy.<sup>1</sup> Lung and breast cancer, which are the most common malignancies, comprise almost half of all metastatic lesions to the heart. Melanoma, leukemia, and lymphoma, which occur less frequently, affect the pericardium in about 50 percent of patients. Signet ring cell pattern adenocarcinoma is an extremely rare entity (0.1–2% of lung carcinomas); It is a subtype of mucin-producing adenocarcinoma characterized by the presence of round cells that have a large cytoplasmic vacuole that displaces the nucleus to the periphery, adopting that characteristic phenotype that has traditionally been compared to that of a signet ring.<sup>2</sup>

The signet ring cell pattern corresponds to an aggressive behavior of the neoplasia, with a 5-year survival of 50%.<sup>3</sup> As we have commented when describing the clinical case, and due to the infrequency of this type of neoplasm at the pulmonary level, it is an essential requirement to rule out a primary extrapulmonary location, mainly in the digestive tract (stomach), prostate, and breast. In this sense, in addition to the clinic, it is useful to resort to immunohistochemical techniques; primary pulmonary neoplasms are usually positive for TTF-I and negative for CDX2 (the opposite occurs with digestive neoplasms). It is also useful to analyze the profile of cytokeratins CK7 and CK20. While primary lung neoplasms are usually CK7 positive and CK20 negative, colon neoplasms are usually CK20 positive and CK7 negative.<sup>4</sup>

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## Conflicts of interest

The authors declare no conflicts of interest.

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