

## **PULMONARY TUMOR THROMBOTIC MICROANGIOPATHY, AN UNCOMMON FORM OF BREAST CANCER PRESENTATION**

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### **CLINICAL CASE**

A 31-year-old woman, without personal or family history of interest, who went to the Emergency Department suffering from dyspnea with minimal exertion and chest pain. A chest CT angiogram was done, which showed centrilobular nodules and branching linear opacities in the lung parenchyma (arrows in Fig. 1A and 1B). Incidentally, signs of diffuse infiltration of the right breast stand out by densities with a nodular and reticular appearance (arrow in Fig. 1C) with skin thickening (arrow tip in Fig. 1C). Three days later, she was admitted to the ICU for signs of acute respiratory distress, where she underwent another chest CT angiogram (Fig. 1D) in which we observed a marked increase in the right chambers of the heart, with inversion of the interventricular septum in comparison with the previous study (Fig. 1C), indicating severe right-sided heart failure.

Pulmonary tumor thrombotic microangiopathy is a relatively unknown form of pulmonary tumor embolism which is most frequently associated with choriocarcinoma and neoplasms in the breast, liver, stomach, and kidney<sup>1</sup>.

The CT findings characteristic of pulmonary tumor embolism are dilation and tortuosity of the subsegmental pulmonary arteries and pulmonary infarction<sup>1</sup>, although we are often faced with a chest x-ray or chest

CT which shows no evidence of parenchymal lung or lymphatic disease<sup>2</sup>.

The intraarterial spread of tumors is an uncommon form of non-thrombotic pulmonary embolism<sup>3</sup>. In this case, the CT findings consist of centrilobular nodules and branching vascular structures: “tree-in-bud” pattern<sup>1</sup>.

Diffuse vascular occlusion increases pulmonary vascular resistance with resulting ventricular failure and cardiovascular collapse.

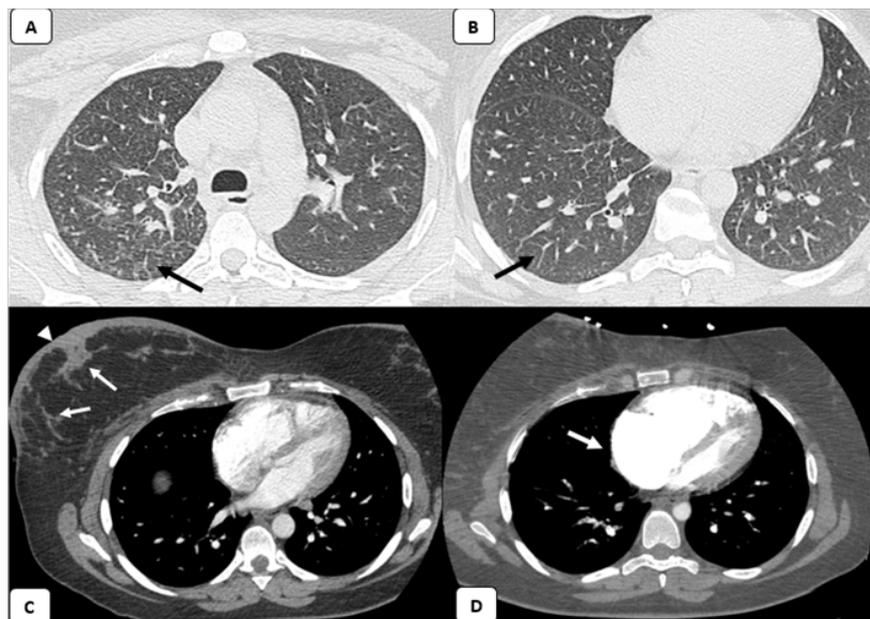
These image findings are based on the metastasis of small groups of tumor cells to the arterial system, activating the coagulation cascade and triggering inflammatory mediators which cause fibrin microthrombi and arterial intimal hyperplasia, reactivating the tumor embolism. This pathological basis determines the reference clinical presentation in our case: rapidly progressive dyspnea (found in 70% of cases), hypoxemia, cough and pulmonary hypertension<sup>4</sup>.

The diagnosis is difficult and is often only detected after the autopsy, with an estimated incidence of 3-26% in patients with solid tumors<sup>2</sup>. It is important to recognize the clinical presentation and associated radiological findings in the context of a patient with an unknown neoplasm, since, when infratreated, tumor thrombotic microangiopathy is often fatal.

The chosen treatment consists of quickly beginning cytotoxic treatment of the main tumor, in this case the breast cancer<sup>5</sup>.

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Figures 1A and 1B: Chest CT. Reconstruction of lung parenchyma. Small peripheral and branching linear centrilobular nodules: “tree-in-bud” pattern (arrows).

Figures 1C and 1D: Chest CT angiogram.

Figure 1C: Diagnostic CT done on patient’s arrival, in which the incidental finding of diffuse infiltration of the right breast (arrows) and skin thickening (arrow tip) can be seen.

Figure 1D: Follow-up CT angiogram after 3 days in which the enlargement of the right heart chambers as a result of pulmonary hypertension comparatively stands out.

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