

A pathological mobile mass in the right heart found on echocardiography: Just a thrombus or a manifestation of a neoplastic disease?

Katarzyna Kurnicka¹, Tomasz Cader², Martyna Kuryła¹, Dominika Dąbrowska¹, Katarzyna Ślubowska³, Piotr Pruszczyk¹

¹Department of Internal Medicine and Cardiology, Medical University of Warsaw, Warszawa, Poland

²Students: Scientific Association by Department of Internal Medicine and Cardiology, Medical University of Warsaw, Warszawa, Poland

³Department of Transplantation Medicine, Nephrology and Internal Medicine, Medical University of Warsaw, Warszawa, Poland

Correspondence to:

Katarzyna Kurnicka, MD, PhD,
Department of Internal Medicine
and Cardiology,
Medical University of Warsaw,
Lindleya 4,
02-005, Warszawa, Poland
phone: +48 22 502 1144,
e-mail: kkurnicka@yahoo.pl

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Pathological mobile masses in the right heart (RH) can be found on transthoracic echocardiography (TTE) in patients with a suspected or confirmed pulmonary embolism (PE), but they are often detected incidentally.

We present three patients with additional mobile masses in the RH detected using TTE, with completely different final diagnoses.

In the first patient, a 61-year-old male with a history of exertional dyspnea and PE

confirmed in CT pulmonary angiography, a “wormlike echo” in the right atrium (RA) (Figure 1A) was detected, corresponding to a thrombus from the venous system, which disappeared following anticoagulation. Importantly, the image of the inferior vena cava (IVC) was normal.

In the second patient, a 69-year-old male with a low-grade fever for several weeks and suspected endocarditis, we also found a mo-

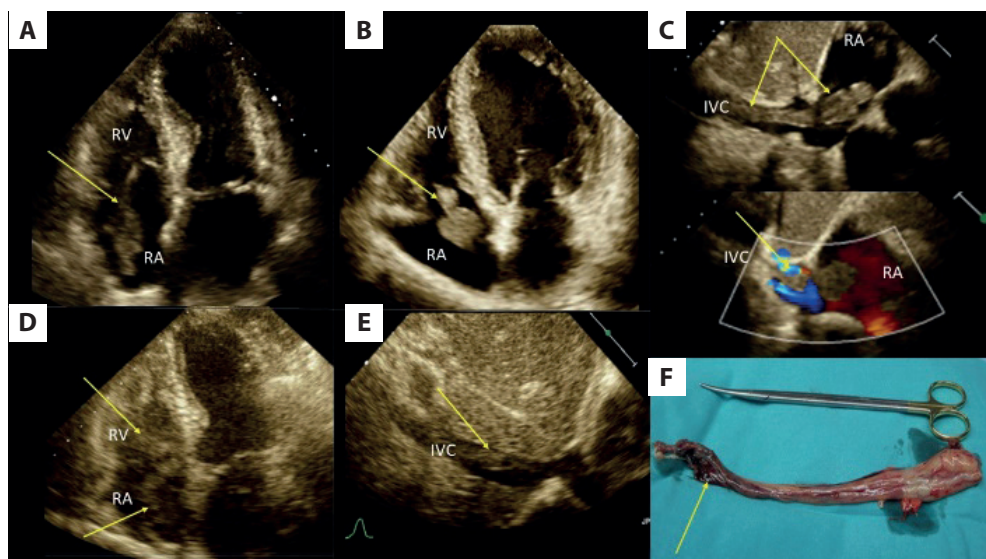


Figure 1. Two-dimensional transthoracic echocardiography in patients with mobile pathological masses found in the right heart. **A.** Mobile thrombus in the right atrium (the arrow) in a patient with a pulmonary embolism; four-chamber view. **B.** Mobile pathological mass in the right atrium (the arrow) in a patient with renal cell carcinoma; four-chamber view. **C.** The inferior vena cava filled with pathological mass (renal cell carcinoma) entering the right atrium (the arrows, top panel); venous flow limitation visible in the color Doppler assessment (the arrow, bottom panel); subcostal view. **D.** Mobile pathological mass in the right heart (the arrows) in a patient with endometrial stromal sarcoma; four-chamber view. **E.** Additional mass (stromal sarcoma) in the inferior vena cava (the arrow); subcostal view. **F.** Stromal sarcoma surgically removed; part of a tumor visible in the right heart on echocardiography (the arrow)

Abbreviations: IVC, inferior vena cava; RA, right atrium; RV, right ventricle

bile mass in the RA (Figure 1B), but it was more echogenic, oblong, emerging from the lumen of the IVC, and disturbing the blood flow (Figure 1C, Supplementary material, Video S1, S2). In this case, abdominal CT and postoperative examination confirmed clear cell type renal cell carcinoma (RCC) in an advanced stage.

In the third patient, a 54-year-old female with worsening exercise tolerance and suspected PE, TTE showed an irregular mass with a “soft” structure that moved from the RA into the right ventricle in diastole (Figure 1D). It was visible in the long segment of the IVC (Figure 1E), similarly to the previous patient. She underwent extensive surgery, and the histopathological examination showed stromal sarcoma originating from the reproductive organ (Figure 1F).

In the case of pathological mobile mass in the RH, especially in the RA, the differential diagnosis should include a thrombus, vegetation, or a primary and metastatic tumor [1, 2]. Mobile RH thrombi are detected in approximately 4% of unselected patients with PE (and even in 18% of PE patients in the Intensive Care Units) and are associated with high early mortality in the case of right ventricular dysfunction [3]. Right heart vegetations are usually associated with the tricuspid valve.

Approximately 15%–20% of myxomas are tumors originating from the RA, pedunculated, and partially mobile [1].

Primary malignant tumor – angiosarcoma, predominantly occurring in the RA (80%), is usually large, not very mobile, and frequently infiltrates adjacent structures [2].

However, the most common cardiac neoplasms are metastases, the frequency of which can be as high as even 18% [1, 2]. Due to transvenous extension of neoplasms, including RCC, hepatocellular carcinoma, and certain types of gynecological neoplasms, careful evaluation of the IVC during TTE is recommended to detect the source of the abnormal mass [2].

RCC can extend through the renal vein into the IVC as a tumor-thrombus formation in several percent of patients, while it reaches the heart in 1% of cases. If the tumor is large, it can even lead to symptoms of RH failure [4].

Endometrial stromal sarcoma is a rare malignant gynecological tumor that infiltrates the IVC and also spreads to the RH, which significantly worsens the prognosis [5].

As is known, tumor invasion is also possible through the superior vena cava.

Additional mobile masses in the RH, detected by TTE may be the first manifestation of neoplastic disease and often require CMR and CT examination to make the proper final diagnosis [2]. A promptly initiated therapy will have a major impact on the patient’s long-term prognosis.

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/kardiologia_polska.

Article information

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