Heartburn as the first symptom of rare cardiac tumor localization: is multimodality imaging a helpful approach?

Sonia Alicja Nartowicz[1], Aleksandra Ciepłucha[2], Anna Olasińska-Wiśniewska[3], Katarzyna Iwanik[4], Olga Trojnarska[2]

1 Faculty of Medicine, Poznan University of Medical Sciences, Poznań, Poland
2 1st Department of Cardiology, Poznan University of Medical Sciences, Poznań, Poland
3 Department of Cardiac Surgery and Transplantology, Poznan University of Medical Sciences, Poznań, Poland
4 Department of Clinical Pathomorphology, Poznan University of Medical Sciences, Poznań, Poland

A 71-year-old man presented with heartburn lasting for 2 months. He had a history of prostate cancer treated surgically and with radio- and chemotherapy 15 years ago. Gastroscopy showed no abnormalities. Abdominal ultrasound revealed a homogeneous, free-floating mass (25 × 29 mm) at the border of the inferior vena cava (IVC) and right atrium. Transthoracic echocardiography confirmed the presence of a pedunculated, mobile mass (FIGURE 1A), with unobstructed blood flow in the vessel. Cardiac magnetic resonance showed a tumor with an increased signal intensity in T2-weighted and T1-weighted images with irregular contrast enhancement (FIGURE 1B; Supplementary material, *Video S1*). Further differential diagnosis including a metastatic tumor from the IVC drainage area, myxoma, and organizing thrombus was recommended.

Due to the history of prostate cancer, it was decided to extend the oncological diagnostic workup. Serum concentrations of basic neoplastic biomarkers were within the reference ranges. The oncologists considered the recurrence or metastases of prostate cancer unlikely due to low level of prostate-specific antigen (1.2 ng/ml; reference value, <6.5 ng/ml).

Computed tomography (CT) scan was performed to detect the primary neoplastic site. The examination showed 2 nodular lesions (both with a radius of 3 mm) in pulmonary segments 3 and 10. However, the oncologists disqualified them as primary malignant lesions. Abdominal CT scan demonstrated a heterogenous, low-attenuation mass above the outflow of hepatic veins to IVC, with small microcalcifications characteristic for myxoma. In addition, CT angiography excluded pulmonary embolism and coronary angiography showed no abnormalities.

After this extensive diagnostic workup, myxoma was considered the most probable diagnosis. However, none of the typical symptoms occurred in our patient (dyspnea, cough, systemic embolism, atrial fibrillation, fatigue).[1] Myxomas are the most common primary cardiac tumors.[2] These benign lesions are usually localized in the left atrium (75%), less often in the right atrium (15%) or both ventricles (5% each).[3] Transthoracic echocardiography is the first-line diagnostic method, but due to the extremely rare localization of the tumor, further imaging tests were required in our patient.[3] Cardiac magnetic resonance is considered the most valuable diagnostic tool because of the tissue differential potential and multiplanar imaging.[1] However, in this case, cardiac CT provided the most accurate information.[1]

Our diagnostic considerations also included metastatic cardiac tumors, which are 100- to 1000-fold more frequent than primary lesions.[2] The most common primary neoplasms metastasizing to the heart are lung cancer (31.7%), esophageal cancer (28.7%), and lymphoma (11.9%);[2] prostate cancer represents only in 1.2% of cases.[4] Metastatic lesions in the IVC drainage area most commonly originate from renal cell carcinoma (intravascular growth in 10% of cases) but, unlike in our case, they form a thrombus that extends through the entire length of IVC.[5]

Correspondence to:
Sonia Alicja Nartowicz,
Faculty of Medicine, Poznan University of Medical Sciences,
ul. Fredry 10, 61-701 Poznań,
Poland, phone: +48 518 959 468,
email: sonianartowicz@gmail.com
Received: December 22, 2020.
Revision accepted: January 10, 2021.
Published online: January 18, 2021.
Kardiol Pol. 2021; 79 (2): 211-212
doi:10.33963/KP.15759

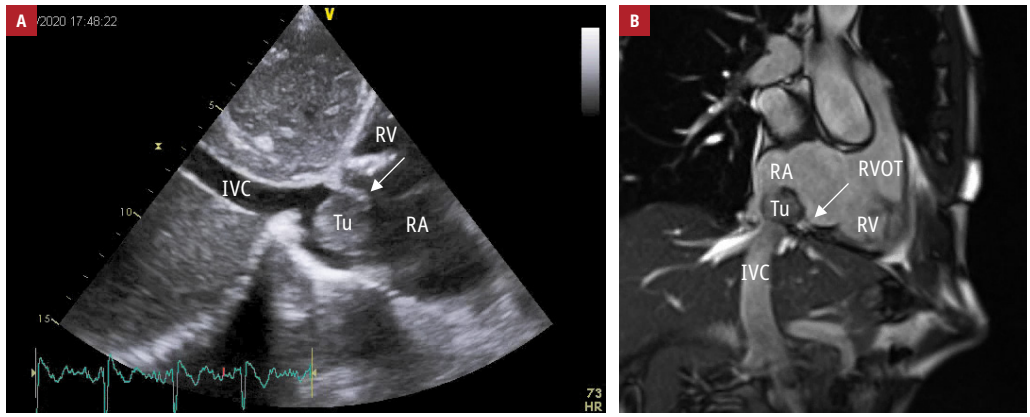

FIGURE 1 **A** – echocardiography, subcostal short-axis view; **B** – cardiac magnetic resonance, sagittal plane; arrows indicate the pedunculus of the tumor
Abbreviations: IVC, inferior vena cava; RA, right atrium; RV, right ventricle; RVOT, right ventricular outflow tract; Tu, tumor

Under extracorporeal circulation, the patient underwent a total resection of the tumor. Histological examination confirmed the diagnosis of myxoma (Supplementary material, *Figure S1*).

Although myxoma is widely known to grow in the atria, its localization and manifestation can be very unusual. Currently, cardiac magnetic resonance is considered the most specific imaging method in the diagnosis of cardiac tumors; however, other imaging modalities can be more conclusive in some cases.

SUPPLEMENTARY MATERIAL

Supplementary material is available at www.mp.pl/kardiologiapolska.

ARTICLE INFORMATION

CONFLICT OF INTEREST None declared.

HOW TO CITE Nartowicz SA, Ciepłucha A, Olasińska-Wiśniewska A, et al. Heartburn as the first symptom of rare cardiac tumor localization: is multimodality imaging a helpful approach? Kardiol Pol. 2021; 79: 211-212. doi:10.33963/KP.15759

REFERENCES

1 Grebenc ML, Rosado de Christenson ML, Burke AP, et al. Primary cardiac and pericardial neoplasms: radiologic-pathologic correlation. Radiographics. 2000; 20: 1073-1103.

2 Sarjeant JM, Butany J, Cusimano RJ. Cancer of the heart: epidemiology and management of primary tumors and metastases. Am J Cardiovasc Drugs. 2003; 3: 407-421.

3 Pepi M, Evangelista A, Nihoyannopoulos P, et al. Recommendations for echocardiography use in the diagnosis and management of cardiac sources of embolism: European Association of Echocardiography (EAE) (a registered branch of the ESC). Eur J Echocardiogr J. 2010; 11: 461-476.

4 Bussani R, De-Giorgio F, Abbate A, Silvestri F. Cardiac metastases. J Clin Pathol. 2007; 60: 27.

5 Adams LC, Ralla B, Bender Y-NY, et al. Renal cell carcinoma with venous extension: prediction of inferior vena cava wall invasion by MRI. Cancer Imaging. 2018; 18: 17.