Right atrial lipoma: the significance of multimodality imaging

Authors: Patrycja Molek, Małgorzata Urbańczyk-Zawadzka, Małgorzata Mielnik, Barbara Szlosarczyk, Jadwiga Nessler, Andrzej Gackowski

Article type: Clinical vignette

Received: April 5, 2021
Accepted: May 29, 2021
Published online: June 1, 2021
Right atrial lipoma: the significance of multimodality imaging

Patrycja Molek, Małgorzata Urbańczyk-Zawadzka, Małgorzata Miernik, Barbara Szlosarczyk, Jadwiga Nessler, Andrzej Gackowski

1Department of Coronary Disease and Heart Failure, John Paul II Hospital, Kraków, Poland
2Department of Radiology and Diagnostic Imaging, John Paul II Hospital, Kraków, Poland
3Noninvasive Cardiovascular Laboratory, John Paul II Hospital, Kraków, Poland
4Institute of Cardiology, Jagiellonian University Medical College, Kraków, Poland

Short title: Cardiac lipoma evaluated by multimodality imaging

Conflict of interest: None declared.

Correspondence to:
Andrzej Gackowski, MD, PhD,
Department of Coronary Disease and Heart Failure,
Noninvasive Cardiovascular Laboratory,
John Paul II Hospital,
Prądnicka 80, 31–202 Kraków, Poland,
phone: +48 12 614 22 18,
e-mail: agackowski@gmail.com

A sixty-seven-year-old woman with a history of mild dyspnea and cough was referred for computed tomography (CT) of the chest. The study did not reveal lung pathology, however a mass in the right atrial wall was discovered. As the CT scan was optimized for a lung scan, the mass was visualized with motion artifacts. She was referred to the hospital for further evaluation. On admission, the patient did not report any symptoms, including the benign ones present before. Physical examination and ECG did not reveal any abnormalities. No arrhythmia was documented.

Transthoracic echocardiography revealed a normal left ventricular ejection fraction, mild tricuspid regurgitation without annular dilatation, and a mild aortic stenosis.

Transthoracic echocardiography confirmed the initial CT findings of an immobile mass.
with a moderate-to-high echogenicity (size 27 × 15 mm) attached to the right atrial roof.
Transesophageal echocardiography showed a heterogeneous, relatively bright mass
(size 30 × 30 mm), with a well-defined border, located in the right atrium between the
ostia of the inferior and superior caval veins (Figure 1A). A low velocity scale color
Doppler study did not reveal blood flow in the tumor. A wide peduncle and stable
attachment to the atrial wall, as well as a relatively solid echostructure of the mass
indicated a different etiology than myxoma. The high echogenicity and well-defined
border suggested a lipoma or fibroma. However, its polycyclic structure could also have
indicated a teratoma, and other tumor types were possible. A multi-chamber cardiac
cyst containing a dense material was also considered. The vena cava inferior lumen was
free of mass, which would be typical for renal cell carcinoma.
Cardiac magnetic resonance imaging showed a solitary, well-circumscribed, irregular
and immobile mass (size 30 × 20 × 30 mm), arising from the right atrial wall. T1-
weighted and fast spin-echo images revealed a high signal of the tumor in a 4 chamber
(Figure 1C) and short axis view (Figure 1D), which was saturated in T1-weighted and
fast spin echo with a fat suppression sequence (Figure 1F). The short-tau inversion
recovery sequence revealed a very low signal in the mass (Figure 1E); features which
indicated a lipid origin of the mass.
Taking into account the lack of symptoms and high likelihood of a benign course of the
tumor, the Heart Team consilium decided on conservative treatment and periodic
clinical observation.
Cardiac lipomas are rare, benign non-myxomatous neoplasms of the heart, typically
composed of mature fat cells [1], which account for 8.4% of primary tumors of the heart
and pericardium [2]. Most frequently they occur in the right atrium or the left ventricle
and they are well-encapsulated, broad based, immobile tumors. Lipomas should be
differentiated with other tumours, particularly myxomas, that are most commonly
located in the LA, usually pedunculated, attached to the central part of the interatrial
septum in the area of the fossa ovalis [3]. There is no recommendation for surgical
treatment, unless they cause arrhythmias, embolization, compression of the coronary
arteries, or flow obstruction within the heart [4]. However, cardiac lipomas, unlike
myxomas, are more stable and rarely cause pulmonary or peripheral embolization [5].
Our report highlights the importance of a comprehensive tumor evaluation, including
echocardiographic assessment of location, shape, echogenicity, presence of
microcirculation, and, most importantly, the evaluation of hemodynamic consequences.
Tomographic techniques provide an important insight into the tissue composition of the mass. In our case, cardiac magnetic resonance was the most useful, helping to differentiate the tumor, and informing the decision to provide conservative treatment and further follow-up.

REFERENCES


Figure 1. A. Cardiac lipoma visualized using transthoracic echocardiography. B. Transesophageal echocardiography — bicaval view. C, D. Four chamber and short axis T1-weighted fast spin-echo. E. Cardiac magnetic resonance including: four chamber short-tau inversion recovery imaging. F. Four chamber view T1-weighted with a fat suppression sequence.