




## Left atrial compression by extracardiac structures: A comprehensive multimodality approach

To the Editor,

The compressions of the left atrium (LA) by extracardiac structures are often incidental findings detected by imaging tools. However, in the general population, although frequently asymptomatic, they can rarely lead to a wide range of symptoms including progressive dyspnea, chest pain, reduced exercise tolerance and, ultimately, pulmonary edema, and hemodynamic collapse. The reasons for such a clinical context may be related to the anatomic and hemodynamic features of LA such as the relatively thin wall and low intraluminal pressure that make it prone to extracardiac compressions, leading to impaired atrial filling, low cardiac output, and pulmonary venous hypertension (1). In their recently published article, Bai and colleagues depicted the challenging case of a giant bronchogenic cyst compressing the LA posterior wall in a patient symptomatic for intermittent chest pain (2). In order to classify the heterogeneous clusters of different structures potentially impressing the LA, van Rooijen et al. (3) categorized them into the following four categories, based on their anatomic origin: (i) distended gastrointestinal structures (topographically displaced, as for hiatal hernia or gastric volvulus; even in their normal position, as in the case of achalasia, esophageal hematoma, or leiomyosarcoma), (ii) mediastinal masses (frequently related to paracardiac lymphomas, thymomas, or schwannomas), (iii) intrapericardial and aortic structures (including pericardial hematomas, adhesions, cysts, and aortic aneurysms), and (iv) pulmonary masses (generally referring to lung tumors or bronchogenic cysts) (3). Furthermore, taking into account the severity of LA anatomical deformation, its hemodynamic consequences, and clinical manifestations, D'Cruz et al. (4) distinguished the term 'obstruction' (to identify extracardiac compressions causing symptoms of hemodynamic impairment) from the terms 'proximity' (used where the contiguity of the extracardiac structure does not cause chamber deformation) and 'encroachment' (in which the extrinsic compression leads to a distortion of the normal cardiovascular architecture, without the signs of hemodynamic deterioration). Among all the imaging techniques, standard basal echocardiographic views are generally able to visualize variations in the LA size and wall distortion, while color-flow Doppler echocardiography can identify the turbulent flow into the LA and pulmonary veins if they are involved by extracardiac

compressions. However, the extrinsic structures may sometimes hinder the sonographic depiction of LA anatomy, leading to a misdiagnosed intra-atrial mass on transthoracic echocardiography including LA tumors, thrombi, infective vegetations, embryonic residues, or artefacts. In this context, when echocardiographic techniques are not straightforward for a comprehensive diagnostic assessment, additional imaging modalities with a greater spatial resolution (such as computed tomography and magnetic resonance imaging scan) may provide further insights on tissue characterization and the origin of extracardiac masses. Finally, the use of an intravenous contrast agent may identify the vascular involvement of the distorting ectopic structure impressing the LA (3, 5). In conclusion, several heterogeneous extrinsic structures may impress the LA. Although often asymptomatic and incidentally detected by imaging techniques, they may sometimes lead to clinical manifestations of hemodynamic impairment. Clinicians should be aware of this occurrence in order to apply a comprehensive diagnostic work-up and the most appropriate therapeutic approach.

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