Clinical History:

69-year-old woman, with history of rheumatic heart disease, had undergone mitral valve replacement with a mechanical prosthesis 28 years before, with good quality of life ever since (class II NYHA), until recently presenting with dyspnoea and poor exercise tolerance (class IV NYHA).

Imaging Findings:

Conventional radiography (CXR) showed enlargement of the cardiothoracic index with cardiomegaly and splaying of the carina with elevation of the left main bronchus. Sternotomy wires and prosthetic mitral and aortic valve were visualised.

Echocardiogram showed massive dilatation of the left atrium (688 ml/m²).

CT with contrast administration confirmed the massive dilatation of the left atrium, with a diameter of 13 cm, lateralised on the right, causing atelectasis of the adjacent lung parenchyma and prominence of the pulmonary vasculature.

Discussion:

Giant left atrium (GLA) is a rare condition with a reported incidence of 0.3% [1], nowadays being an uncommon diagnosis as the result of the decreased frequency of rheumatic valve disease. There have been several definitions ranging from 6 to beyond 10 cm in diameter [2], with Hurst defining it as "one that touches the right lateral side of the chest wall" and Piccoli et al. as a cardio-thoracic ratio on chest X-ray (CTI) of >0.7 combined with a left atrial anterior-posterior diameter of >8 cm on transthoracic echocardiography [1].

GLA is the end product of severe and prolonged pressure and volume overload, occurring mainly during mitral insufficiency, stenosis, and rarely in mitral valve prolapse, in longstanding rheumatic mitral valve disease [2]. GLA present usually with atrial fibrillation, thromboembolic complications due to potential stasis and haemodynamic and/or respiratory complications resulting from compressive symptoms from neighbouring organs, with some reported cases of dysphagia and Ortner's syndrome. It may, however, be asymptomatic in a minority of cases [2].

Conventional radiography is a useful initial screening tool by showing increased cardiothoracic ratio and features characteristics of an enlarged left atrium, such as splaying of the carina and a double right heart border.

Transthoracic echocardiography is the imaging technique of choice in these patients because of its precision in assessing the heart chambers and least expensive method for diagnosing and monitoring. It may, however, not be sufficient to define accurately the atria and adjacent structures, and thus computed tomography and magnetic resonance imaging have been considered as additional techniques for this purpose, particularly in patients with a CTI>0.7 or when symptoms of compression occur.
GLA poses a significant mortality risk and therefore needs to be evaluated with intention to treat if possible, specifically on the presence of compressive symptoms or thrombus and history of thromboembolic events, although some authors claim that there is an indication even in asymptomatic patients [2].

Surgical options for GLA are divided for either performing mitral valve surgery alone or mitral valve surgery with left atrial volume reduction, by means of partial plication or excision of inferior or inferior and superior atrial walls, or partial auto-transplantation of the heart. Independently, a GLA is an indication for the initiation of anti-coagulant therapy.

Giant left atrium should be kept in mind whenever a patient presents with rheumatic mitral disease history and right lung opacification on CXR [1].

Written informed patient consent for publication has been obtained.

**Differential Diagnosis List:** Giant left atrium due to rheumatic mitral disease, Left atrial congenital anomalies, Tumour of the mediastinum, Right pleural effusion

**Final Diagnosis:** Giant left atrium due to rheumatic mitral disease

**References:**


Description: CXR showing enlargement of the cardiothoracic index, with splaying of the carina and elevation of the left main bronchus. Sternotomy wires (white arrow top) and prosthetic mitral (full arrow) and aortic valve (clear arrow) are also visualised. Origin: Department of Radiology, Centro Hospitalar Lisboa Ocidental E.P.E., Lisboa, Portugal, 2015
Description: Lateral CXR showing cardiomegaly, sternotomy wires (white arrow top) and prosthetic mitral (full arrow) and aortic valve (clear arrow). Origin: Department of Radiology, Centro Hospitalar Lisboa Ocidental E.P.E., Lisboa, Portugal, 2015
Description: Echocardiogram evaluation showing massive left atrial enlargement. Origin: Department of Cardiology, Centro Hospitalar Lisboa Ocidental E.P.E., Lisboa, Portugal, 2015
**Description:** Axial CT evaluation showing massive dilatation of the left atrium, causing atelectasis of the adjacent lung parenchyma. Note artefacts from prosthetic mitral valve (arrow)

**Origin:** Department of Radiology, Centro Hospitalar Lisboa Ocidental E.P.E., Lisboa, Portugal, 2015
Description: Axial CT evaluation showing massive dilatation of the left atrium, with measures. Origin: Department of Radiology, Centro Hospitalar Lisboa Ocidental E.P.E., Lisboa, Portugal, 2015
Description: Coronal CT evaluation showing massive dilatation of the left atrium, causing atelectasis of the adjacent lung parenchyma (clear arrow). Note artefacts from prosthetic mitral valve (full arrow).

Origin: Department of Radiology, Centro Hospitalar Lisboa Ocidental E.P.E., Lisboa, Portugal, 2015
Description: Sagittal CT evaluation showing massive dilatation of the left atrium. Origin: Department of Radiology, Centro Hospitalar Lisboa Ocidental E.P.E., Lisboa, Portugal, 2015
**Description:** Volume-rendering computed tomography scan demonstrating that the GLA was nearly encompassing the lower half of the right hemithorax. **Origin:** Department of Radiology, Centro Hospitalar Lisboa Ocidental E.P.E., Lisboa, Portugal, 2015