# Giant Left Atrium in Rheumatic Mitral Valve Disease

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## Abstract

The Giant Left Atrium (GLA) is a rare condition, more commonly related to rheumatic mitral valve disease; it can be mistaken with a few possible differential diagnoses when less accurate methods are implemented, potentially leading to particularly dangerous and unnecessary procedures in this setting. Cardiovascular imaging methods, such as Cardiac Magnetic Resonance (CMR), can be valuable for this differentiation and provide high spatial resolution, supporting accurate diagnosis and surgical planning when indicated. Selecting the most precise diagnostic method, however, requires deep knowledge of the GLA condition and clinical data, leading to a correct suspicion. Furthermore, opting for using volumetry rather than the biplanar method in cases of significant deformity ensures greater accuracy in the values obtained.

## Case Report

Female patient, 58 years old, with a history of rheumatic mitral valve disease and atrial fibrillation (AF) underwent mitral valve replacement surgery with bioprosthesis implantation in 1992.

Remained asymptomatic until 2021, when she began experiencing progressive symptoms of heart failure, including moderate exertional dyspnea (NYHA Functional Class II), orthopnea, and lower limb edema. A Transthoracic Echocardiogram (TTE) at that time revealed severe insufficiency of the mitral bioprosthesis, significant tricuspid insufficiency, and biatrial enlargement. The Left Atrium (LA) showed an indexed volume of 178 m³ and an anteroposterior diameter of 64 mm.

She was placed on the surgical waiting list for mitral valve replacement and tricuspid valve repair but remained on the list until 2024 due to delays from the COVID-19 pandemic. The patient was then subjected to Cardiac Magnetic Resonance Imaging (CMRI) for preoperative planning. CMRI showed a notable increase in LA measurements compared to the 2021 TTE, with an anteroposterior diameter of 75 mm and volumes of 263 m³ by the biplane method and 333 m³ by volumetry. No thrombus was visualized inside the LA.

## Discussion

Giant Left Atrium (GLA) is a rare condition, most commonly related to rheumatic mitral valve disease. The most widely accepted definition for Giant Left Atrium (GLA) is an LA anteroposterior measurement of 65 mm or greater in the longitudinal parasternal view of the echocardiogram.[1] This view corresponds to the 3-chamber cine in CMRI, which provides greater spatial resolution.

GLA may be mistaken for other conditions, such as tumors or pericardial effusion when using less precise diagnostic methods; misdiagnosis can lead to unnecessary procedures, like biopsies and pericardiocentesis, which may be particularly dangerous in this setting.[2,3]

The primary etiology for GLA reported in the literature is rheumatic disease. An epidemiological study in a Qatari hospital found that 92% of GLA cases were due to rheumatic mitral valve disease, with 8% also involving the tricuspid valve.[4] It has been suggested that atrial enlargement in rheumatic heart disease results from rheumatic carditis. However, studies have not yet demonstrated Aschoff nodules in LA tissue, supporting the concept of dilation secondary to chronic pressure and volume overload.[5,6]

GLA is associated with numerous complications, including extrinsic compression of extracardiac structures, formation of refractory thrombi in the LA, and development of AF, which can further contribute to atrial dilation. The main surgical

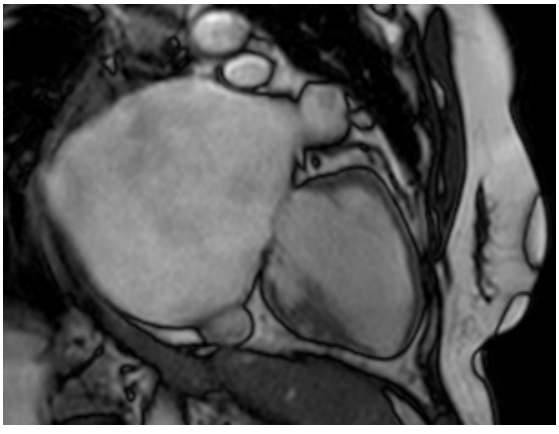

**Figure 1 –** *Giant Left Atrium through Cardiac Resonance in 2-chamber cine*

## Keywords

Heart Atria; Magnetic Resonance Imaging; Heart Valve Diseases.

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**Figure 2 –** *Biatrial dilation and Giant Left Atrium through Cardiac Resonance in 4-chamber cine*

indication for atrial volume reduction is the presence of these complications; in their absence, mitral valve replacement alone has been shown to reduce LA size in some cases.[7]

In cases of extensive LA deformation, biplane volume estimation is less accurate. CMRI allows direct measurement through volumetry, enabling precise quantification.

## Author Contributions

Conception and design of the research, acquisition of data, analysis and interpretation of the data, statistical analysis and critical revision of the manuscript for intellectual content: Darzé AC, Paladino Filho AT, Senra T, Rassi AM, Caneschi JM, Morales PS, Ponte Junior JRT, Prazeres CE, Hendges RC, Pinto IMF; writing of the manuscript: Darzé AC.

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### Ethics Approval and Consent to Participate

This article does not contain any studies with human participants or animals performed by any of the authors.

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