

## Pulmonary Embolism Revealing a Right Atrial Myxoma

Maha Bouziane<sup>1</sup>, Oumaima Naour<sup>1</sup>, Salim Arous<sup>1</sup>, Ahmed Adaoui<sup>2</sup>, Salma Lyazidi<sup>2</sup>, Ouafaa El Allam<sup>2</sup>, Mohamed Ghali Benouna<sup>1</sup>, Abdennasser Drighil<sup>1</sup>, Leila Azzouzi<sup>1</sup>, Rachida Habbal<sup>1</sup> and Youssef Ettaoumi<sup>2\*</sup>

<sup>1</sup>Cardiology Department, Ibn Rochd University Hospital of Casablanca, Morocco

<sup>2</sup>Cardiovascular Surgery Department, Ibn Rochd University Hospital of Casablanca, Morocco

\*Corresponding Author: Youssef Ettaoumi, Cardiovascular Surgery Department, Ibn Rochd University Hospital of Casablanca, Morocco.

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### Abstract

Myxomas are the most common benign cardiac tumors. The right atrial location is rare and can lead to several complications. We report a clinical case of 34 year old female patient with pulmonary embolism that revealed the presence of right atrial myxoma. Surgery is the standard treatment and should be done with some precautions to avoid embolization and prevent the risk of relapse.

**Keywords:** Right Atrial Myxoma; Pulmonary Embolism; Cardiac Tumors

### Abbreviations

TTE: Transthoracic Echocardiography; TEE: Transesophageal Echocardiography

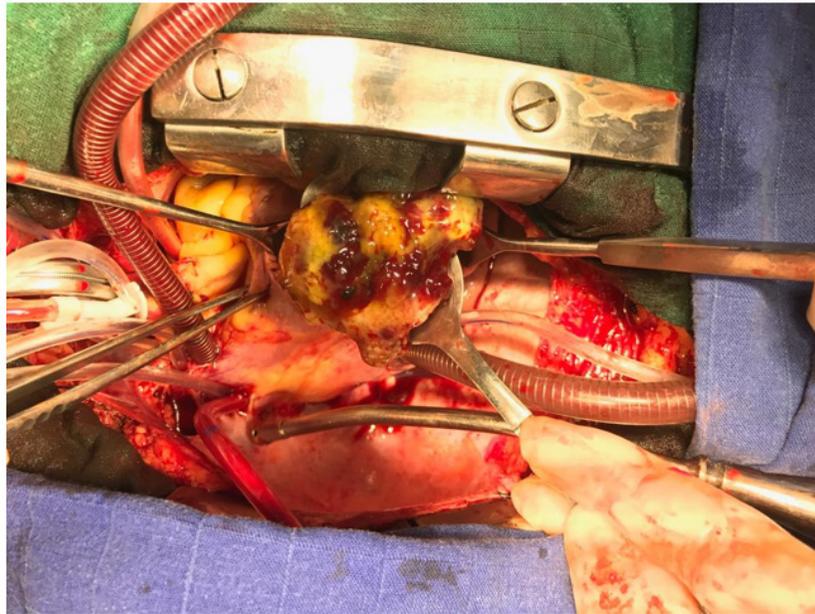
### Introduction

Myxoma are rare tumors but represents 50% of all benign cardiac neoplasms [1]. In 75% to 80% of cases, they are localized in the left atrium, the right atrial localization is rare. Sometimes, myxoma are asymptomatic with accidental diagnosis, but in some cases, they could lead to complications such as ventricular or valvular compression and embolism that occur in 30 to 40% of patients. We report the case of a 34 years old female patient who came to the emergency department in a clinical presentation of pulmonary embolism that revealed a right atrial myxoma.

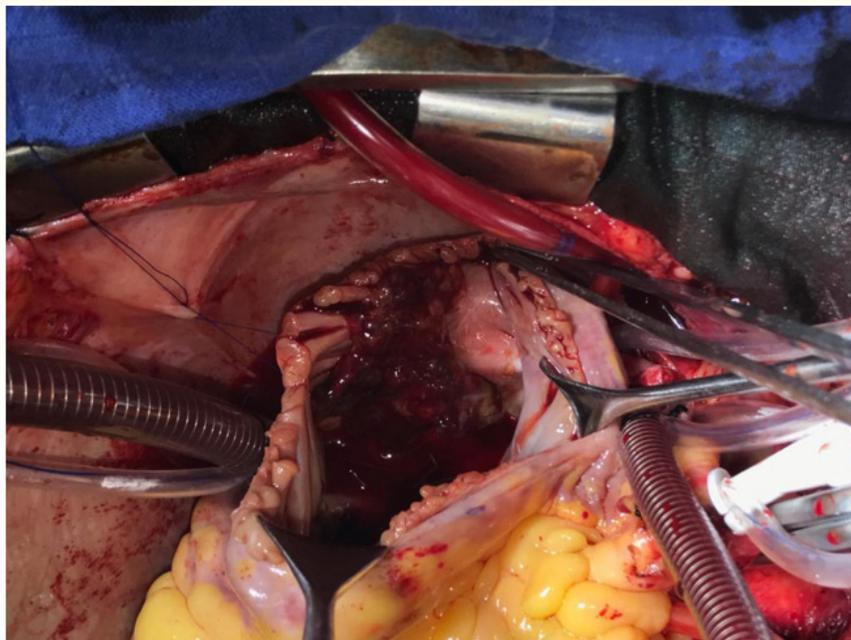
### Case Report

A 34 year old female patient, without any medical history, presented to the emergency department with a sudden onset of dyspnea. The clinical examination revealed a blood pressure of 110/70 mmHg, with tachycardia at 110 bpm and oxygen saturation at 90%. The cardiac and pulmonary examination were normal. The electrocardiogram showed an incomplete right bundle branch block. The chest X-ray was normal. The echocardiography revealed the presence of a voluminous homogeneous mass of the right atrium appended to the inter-atrial septum prolapsing through the tricuspid valve at diastole, with mild tricuspid regurgitation, estimated SPAP at 45 mmHg and dilatation of the right ventricle. A CT-scan was performed and confirmed the presence of the right atrial mass with homogeneous density and revealed the presence of a right segmental pulmonary embolism.

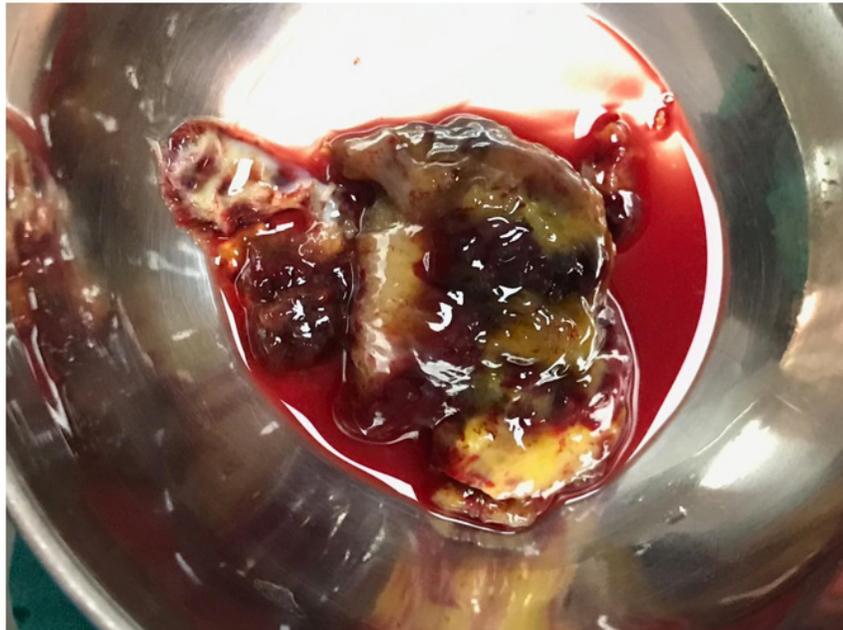
The patient undergone surgery. A median sternotomy was made. Ascending aortic and bicaval cannulation was made for cardiopulmonary bypass. The right atrium was opened and the tumor and its basal insertion was carefully resected to avoid new embolism (Figures 1-3). The histopathological examination showed that the mass was a myxoma. The postoperative course was uneventful and the patient remained asymptomatic during one year follow up with no recurrence of the tumor.



*Figure 1: Surgical view of the right atrial myxoma.*



*Figure 2: Surgical view after resection.*



*Figure 3: The myxoma after resection.*

## Discussion

Myxoma represents 50% of all cardiac tumors. It can appear at any age, but frequently between the age of 30 and 60 year old [2]. Mostly, it arises in the left atrium, but in rare cases it could arise in the right atrium or in the ventricles [3]. A female predominance has been reported in some studies [2,4]. Embolism is a complication that can occur in 30 to 40 % of patients with myxoma [5]. Myxoma of the left side could be responsible of brain infarction, coronary syndrome or occlusion of peripheral or visceral arteries, whereas right sided myxoma can lead to pulmonary embolism that could be a life threatening complication.

Right atrial myxoma could have different clinical presentations that are mostly nonspecific. Symptoms depend on the type and the size of the tumor. For patients with breathlessness, a CT-scan should be performed systematically to exclude pulmonary embolism. And conversely, right atrial myxoma should be considered as a possible etiology in patients with pulmonary embolism.

The most predictive factor of embolism in myxoma is the morphology of the mass. The most common type is the “round shaped” myxoma that is less embolic than the papillary or villous types, that are more fragile and could easily embolize. The mechanism of embolization could be the fragmentation of the tumor or the detachment of a thrombus adjoined to the mass. Furthermore, the polypoid types could easily prolapse through the mitral or the tricuspid valve and can cause destruction of the annulus or the leaflets. In addition, myxomas are vascular tumors that may be neovascularized by a branch of a coronary artery and a case of hemorrhage has been previously reported [6].

The transthoracic echocardiography is the first line technique for the diagnosis of the tumor. It can assess tumor location, size, attachment and mobility. The transesophageal echocardiography (TEE) has better sensitivity and specificity with a better resolution of the atria and the atrial septum. TEE is also more accurate in the detection of small masses.

Cardiac magnetic resonance can also be useful for the tissue characterisation of the mass and can differentiate tumors from a thrombus.

Surgery is the conventional treatment for cardiac myxomas. It should be planned as soon as possible after the diagnosis, in order to avoid embolic and obstructive complications. In case of associated pulmonary embolism, pulmonary embolectomy is necessary if there is a large tumor embolism in order to prevent chronic pulmonary hypertension and right ventricular dysfunction. For the right atrial myxomas, the surgery is done with a bicaval cannulation. The resection of the tumor should be done in a single bloc without fragmentation wherever possible to avoid embolization. Electrocoagulation of the tumor base and the surrounding area should be performed in order to reduce the risk of relapse [7].

The surgery is associated with an early post-operative mortality of 2.2% and there is 23-33% risk of post-operative atrial fibrillation [8].

For some authors, a follow-up with a bi-annual echocardiography is recommended to detect recurrent tumors, specially for young patients. However, according to Vroomen., *et al.* no myxoma recurrence has been detected with a mean follow up of 72 months in a cohort of 82 patients [9].

### Conclusion

Right atrial myxoma represents a rare location of myxomas. Pulmonary embolism is the main complication and can sometimes reveal the presence of the mass. That's why, in every case of pulmonary embolism, the right heart should be carefully assessed by transthoracic echocardiography, and if necessary by transesophageal echocardiography for more accuracy.

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