

## Large Left Atrial Thrombus Under Oral Anticoagulation Therapy with Rivaroxiban

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### 1. Abstract

A 75 years old male patient, had a lower limb phlebitis treated by Rivaroxiban, presented an increasing dyspnea. A Doppler echography found a left sural deep venous thrombosis (DVT). The Transthoracic and transesophageal echocardiography found a large left atrial tumor, moving randomly across the mitral valve, 100 mm of length and going until the left ventricular apex (Figure 1). The surgical procedure was performed, 24 hours after Rivaroxiban's interruption. The microscopic examination of the mass confirmed thrombus nature of this appendage. The patient was discharged 8 days later with efficient oral anticoagulation with oral Coumadin. The one-year follow-up was uneventful.

### 2. Case Report

Atrial thrombus and atrial tumors are the two most frequent entities when a large appendage in the left atrium is discovered on echocardiography. In term of morphology and mobility, the two entities are un-differentiable. We report here the case of a large left atrial thrombus, considered initially as a large atrial myxoma, in a 75-year-old patient.

A 75 years old male patient, with an history of mellitus diabetes, dyslipidemia and lower limb phlebitis treated by Rivaroxiban, presented an increasing dyspnea leading him to have a check-up at his cardiologists'. He presented an exercise dyspnea associated to an asymmetric calf perimeter. A Doppler echography found a left sural deep venous thrombosis (DVT) associated with a biological

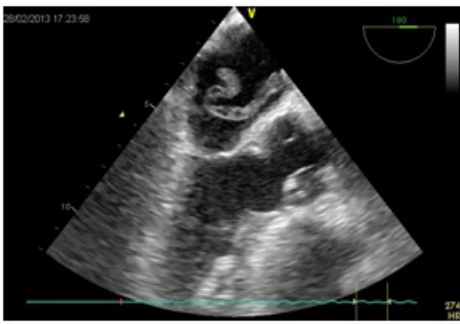
inflammatory syndrome. ECG showed sinus rhythm.

The Transthoracic and trans esophageal echocardiography found a large left atrial tumor, moving randomly across the mitral valve, 100 mm of length and 8 to 10 mm of diameter, and going until the left ventricular apex (Figure 1). The mitral valve was normal. An atrial myxoma was then suggested. The coagulation factors were normals. The blood level of Rivaroxiban was not evaluated. An abdominal CT-scan revealed large areas of kidney's infarctions, compatible with a systemic embolic migration.

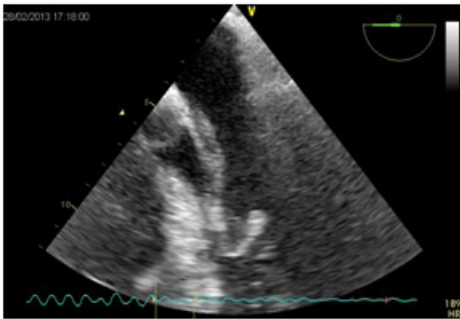
After 48 hours of non-effective anticoagulation therapy, a surgical management was decided and the patient transferred in our department.

The surgical procedure was performed, 24 hours after Rivaroxiban's interruption, under cardiopulmonary bypass(CPB). After aortic cross-clamping, and when the left pulmonary vein was opened for the left ventricular vent, the tumor was spontaneously ejected through the superior pulmonary vein orifice. Macroscopically, the mass looked like being an atrial thrombus. The mitral valve appeared normal. We decided to approach the right atrium and founded the thrombus stump appended to a patent septal foramen ovalis (Figure 2). The communication was closed and the atrial septal aneurysm was plicated. The patient did not need any blood transfusion.

The microscopic examination of the mass confirmed its bloody origin.



a: During the systole the thrombus was into the left atrial cavity blocked through the foramen ovale.



b: During the diastole the thrombus prolapsed into the left ventricular chamber to the apex.

**Figure 1**-Transthoracic echocardiography



**Figure 2**- Intra left atrial thrombus  
the length of this left atrial thrombus was 10 cm.

The patient was discharged 8 days later with efficient oral anticoagulation with oral Coumadin. The follow-up at one year was uneventful. The control echocardiography was normal without any new thrombus in the left atrium.

### 3. Discussion

Left atrial thrombosis was first described by Wood in 1814 by autopsy, associated to a mitral stenosis [1]. Usually, it is reported in patients with atrial fibrillation or coagulation disorders [2].

The diagnosis is often made after a systemic thromboembolism events, rated about 10.4% per year and presenting 15.8% of all

causes mortality per year [3]. The atrial thrombus is considered to be a systemic embol risk factor, especially when a free-float thrombus is shown on trans esophageal echocardiography. Transthoracic and trans esophageal echocardiography are the main morphological exams to identify these heart tumors. These left atrial mass are formed after fixation on the left atrial wall, such like in a secundum atrial septal defect or a septal aneurysm, as it is reported in our case, and grows gradually till it detaches and forms a free float inside the atrium [2]. The main differential diagnosis are the atrial tumors, specially myxomas and endocarditis vegetations diagnosed on echocardiography too [4]. The treatment of myxomas is surgical while atrial thromboses can be treated with anticoagulant drugs. The pathological analysis can differentiate microscopically the two entities of atrial mass.

In order to avoid excessive blood tests with a classic warfarin treatment, our patient was treated by Rivaroxiban for his pulmonary embolism, complicating a deep vein thrombosis. It is a new factor Xa inhibitor, indicated in the prevention of ischemic stroke in non-valvular atrial fibrillation, the prevention and treatment of DVT in orthopaedic surgery or in secondary prevention of pulmonary embolism in adults. Even with this treatment and a good drug compliance, the atrial mass was still very large. It embolizes in kidneys and lungs, which were the early symptoms and complications of this atrial thrombus.

As the oral anticoagulation failed and there was no regression of the appendage's size, the surgical treatment was obvious. The treatment of the main cause of this thrombus, such like secundum atrial septal defect and the aneurysmal plication was also done. The spontaneous ejection of this mass, by the atrial flow confirms its weakness, and though it's high embolic risk.

Such atrial appendage can be treated by long term oral anticoagulation, especially when it is measured less than 2.5 cm and limited to the left atrial appendage [5]. Otherwise, a fibrinolytic treatment could be used to treat these thrombi, if oral anticoagulation is not successful but the risk of hemorrhage could be greater in case of late surgical treatment. The surgical thrombectomy is recommended for free floating left atrial thrombi, presenting a higher risk to embolise [6].

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