CASE REPORT

**COMBINED CORONARY ARTERY BYPASS GRAFTING AND SURGICAL RESECTION OF RIGHT ATRIAL MYXOMA COMPLICATED WITH PULMONARY EMBOLISM**

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**ABSTRACT**

Although the association between right atrial myxoma and pulmonary embolism is rare, it has been recognized for many years. This condition is fatal unless surgical intervention is performed for resection of right atrial mass and pulmonary embolectomy.

A 68 years old diabetic, hypertensive male patient was admitted to our hospital with severe dyspnea and chest pain. An echocardiogram and pulmonary CT angiography revealed right atrial mass and pulmonary embolism. Furthermore, coronary angiography was done and showed a three vessels disease.

Complete surgical removal of the right atrial myxoma and parts of the tumor embolectomy from the right pulmonary artery were successfully performed combined with coronary artery bypass grafting to LAD, obtuse marginal and diagonal branches. Histological examination of the primary tumor as well as the embolus confirmed the diagnosis of benign myxoma. The patient was discharged after 15 days of his successful operation.

We report this case, as it is unique because of the rarity of the combined surgery of right atrial myxoma complicated with pulmonary embolism and coronary artery bypass grafting.

**Keywords:** Myxoma. Pulmonary embolism. Right atrial tumor. CABG.

**RESUMEN**

CIRUGIA COMBINADA DE BYPASS DE ARTERIA CORONARIA Y RESECCIÓN QUIRÚRGICA DE UN MIXOMA AURICULAR DERECHO COMPLICADO POR UNA EMBOLIA PULMONAR

Si bien la asociación entre el mixoma auricular derecho y la embolia pulmonar es poco frecuente, se conoce su existencia desde hace años. La condición es fatal salvo si se realiza una intervención quirúrgica para la resección de la masa auricular derecha y una embolectomía pulmonar.

Ingresa a nuestro hospital un paciente masculino diabético e hipertenso de 68 años con disnea...
severa y dolor de pecho. Un ecocardiograma y una angioTAC de pulmón revelan un masa auricular derecha y una embolia pulmonar. Además, la coronarioangiografía realizada identifica enfermedad en tres vasos.

Se realiza con éxito la reseción quirúrgica completa del mixoma auricular derecho y parte de la embolectomía tumoral de la arteria pulmonar derecha junto con un bypass de la arteria coronaria a la descendente anterior, la marginal obtusa y las ramas diagonales. El examen histopatológico del tumor primario y de la embolia confirman el diagnóstico de mixoma benigno. El paciente fue dado de alta 15 días después de la exitosa operación.

Publicamos este caso ya que es único porque es poco frecuente es combinar la cirugía de un mixoma auricular derecho complicado por una embolia pulmonar con una cirugía de bypass de la arteria coronaria.

**Palabras claves:** Mixoma. Embolia pulmonar. Tumor auricular derecho . Cirugía de Bypass Coronario CABG.

**RESUMO**

CIRURGIA COMBINADA DE BYPASS DA ARTÉRIA CORONÁRIA E RESSECÇÃO CIRÚRGICA DE UM MIXOMA AURICULAR DIREITO COMPLICADO POR UMA EMBOLIA PULMONAR

Apesar da associação entre mixoma auricular direito e embolia pulmonar ser pouco frequente, sua existência é conhecida há anos. A condição é fatal salvo se realizamos uma intervenção cirúrgica para a resecção da massa auricular direita e uma embolectomia pulmonar.

Ingressa ao nosso hospital um paciente masculino diabético e hipertenso de 68 anos com dispnéia severa e dor no peito. Um ecocardiograma e um angioTAC do pulmão revelam uma massa auricular direita e uma embolia pulmonar. Além disso, a coronarioangiografía realizada identifica comprometimento de três vasos.

Realiza-se com êxito a resecção cirúrgica completa do mixoma auricular direito e parte da embolectomía tumoral da artéria pulmonar direita junto com um bypass da artéria coronaria à descendente anterior, a artéria obtusa marginal e os ramos diagonais. O exame histopatológico do tumor primário e da embolia confirmam o diagnóstico de mixoma benigno. O paciente recebeu alta 15 dias depois da exitosa operação.

Publicamos este caso por ser único devido a pouco frequência em combinar a cirurgia de um mixoma auricular direito complicado por uma embolia pulmonar com uma cirurgia de bypass da artéria coronaria.

**Palavras chave:** Mixoma. Embolia pulmonar. Tumor auricular direito . Cirurgia de Bypass Coronário CABG.

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**INTRODUCTION**

Primary cardiac tumors are rare and have an incidence of 0.3% of all open-heart operations. Cardiac myxoma is the most common primary tumor of the heart with an estimated incidence of 50%, mostly arising from the atria and rarely from the ventricles(1-2).

The symptoms accompanying right atrial myxoma vary widely. It might remain asymptomatic or induce systemic manifestations such as fever, weight loss, anemia, arthralgia or Raynaud’s phenomenon. Whereas, dyspnea, chest pain, syncope, pulmonary hypertension, right-sided heart failure and sudden death usually occur as consequences of pulmonary embolism induced by tumor fragments or thrombus from the tumor surface(2).
The standard tool for diagnosis of such tumors is the echocardiography either transthoracic or transesophageal[3]. Surgical resection is the only recommended therapy in such patients as it is the usual curative intervention.

We report this case of right atrial myxoma complicated with pulmonary embolism and combined ischemic heart disease. Resection of atrial myxoma and pulmonary embolectomy, combined with coronary artery bypass grafting was performed.

**CASE REPORT**

Our case is a diabetic, hypertensive, 68 years old Saudi male patient who was admitted to our hospital after he developed a severe shortness of breath and chest pain. The patient was admitted to CCU for further investigations. Rapidly patient deteriorated and desaturated, an urgent intervention in the form of intubation, and ventilation was started. In addition, CVP line and radial artery canula were inserted.

A chest X-ray was done and showed findings suggestive of bilateral pulmonary edema. Transthoracic (TTE) and transesophageal (TEE) echocardiogram (fig 1&2) were done and revealed a large right atrial mass of different echogenicity and areas of calcification measuring about 23x42 mm and attached to the interatrial septum with a pedicle. The mass was not encroaching on the right ventricular inflow and outflow. Also left ventricle wall motion abnormalities were observed, involving the anterior wall and septum with an estimated Ejection Fraction of 40%. In addition there was a pulmonary embolism in the right pulmonary artery. Pulmonary computed tomography (CT) angiography (fig. 3&4) revealed a large filling defect in the right atrium closely related to the atrial septum and measuring about 23 x 29 x 41 mm. In addition, filling defects were seen partially occluding the proximal part of the pulmonary arteries supplying the right upper and middle lobes. The Cardiac Surgery Team was consulted to evaluate the case and a coronary angiogram was recommended because of the patient age. The coronary angiogram (fig.5) revealed a three-vessel disease including, a tight lesion in the LAD, at the level of the first diagonal
branch and in the obtuse marginal artery.

PROCEDURE

A standard sternotomy incision was made. Cardiopulmonary bypass was established by ascending aortic and bicaval cannulation (moderate hypothermia). The heart was arrested with the infusion of histidine-triptophane-ketoglutarate (HTK) solution (Custodiol®; Koehler Chemie, Alsbach-Haenlein, Germany).

A right atriotomy was done and the right atrial mass was consistent macroscopically with benign myxoma. It was 3x4x5cm large, friable and gelatinous mass with large areas of myxoid matrix and areas with hemorrhage within the tumor mass (fig.6). It appeared attached with a short pedicle to the interatrial septum. The mass was resected with a piece of the interatrial septum and the defect was closed utilizing a pericardial patch.

Main pulmonary artery was opened and the incision extended to the right pulmonary artery. Embolectomy was performed successfully. After we confirmed that there were no further masses in the arteries supplying each segment, the right and main pulmonary artery and atrium were closed.

Standard coronary artery bypass grafting was performed utilizing saphenous vein grafts to the obtuse marginal, first daigonal and left anterior descending arteries.

The patient was uneventfully discharged from the hospital on postoperative day 15.

DISCUSSION

It was reported that myxomas are rare benign cardiac tumors and that their incidence is only 0.5 per million populations per year [4]. Cardiac myxomas are most common in the left atrium where nearly (85% to 90%) of all the myxoma cases develop, while (10% to 12%) affect the right atrium and only (1% to 4%) in the ventricles(5-6).

Embolism occurs in 21% to 33% of the patients with left atrial myxoma and approximately 2% to 24% of the patients with myxoma in the right atrium(5-6-7). The main destinations of emboli arising from left atrial myxoma are the brain, kidney, branches of the aorta and lower
extremities. While in right atrial myxoma, pulmonary embolism can develop as in our case (8).

Pulmonary embolism in most cases arises from thrombotic material from either a vein, from the right side of the heart or from catheter tips. When no risk factors or clinical evidence for thrombosis are apparent, non-thrombotic pulmonary embolism such as tumor emboli are suspected (8).

The diagnosis of such emboli is sometimes difficult and challenging. Echocardiography either TTE or TEE and Pulmonary CT angiography is usually sufficient to confirm the diagnosis of the original tumor in the heart and its fragments into the pulmonary artery branches (3).

The only management of these patients is surgical resection of the cardiac tumor and pulmonary embolectomy of the migrated fragments from the cardiac mass. Surgical resection is curative and often safe with the improvement in methods of myocardial protection and moderate hypothermia.

In our case, the associated coronary artery disease with depression of the left ventricular function complicated the surgical intervention due to the need for coronary artery bypass grafting.

Disclosures: Authors declare that they do not have any commercial, financial nor property interest in relation to the products or companies mentioned in the above article.

REFERENCES


