Cardiac atrial masses after a heart transplant. An array of differential diagnoses

Masas auriculares cardíacas tras un trasplante cardíaco. Una serie de diagnósticos diferenciales

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Abstract

Cardiac masses represent a heterogeneous group, including secondary malignancies as the most common ones, followed by primary tumors, vegetations, and thrombi. Cardiac imaging techniques are essential for the non-invasive diagnosis of cardiac masses. Thrombi in a transplanted heart, especially in atria, are very common, but when they appear as multiple, they could be an early sign of rejection. We present the case of a cardiac transplant patient who presented with masses in both atria and the left ventricle, as well as symptoms of right heart failure. Various image techniques were useful in establishing the differential diagnoses and appropriate treatment.

Keywords: Atrial thrombi. Cardiac transplant. Cardiac masses.

Resumen

Las masas intracardiacas representan un grupo variado, que incluye metástasis como las más frecuentes, seguidas de tumores primarios, vegetaciones y trombos. Los trombos intracavitarios en un paciente trasplantado, especialmente en la aurícula, son muy frecuentes, pero, si aparecen como masas múltiples, pueden ser un dato precoz de un posible rechazo. Se expone el caso de un paciente trasplantado cardíaco que se presenta con masas intracavitarias en ambas aurículas y en el ventrículo izquierdo y datos de insuficiencia cardíaca de predominio derecho. Gracias al uso de varias técnicas de imagen se estableció el diagnóstico diferencial de las mismas, y se instauró el tratamiento adecuado.

Palabras clave: Trombos auriculares. Trasplante cardíaco. Masas intracardiacas.

Clinical case

A 76-year-old man presented to the Emergency Department with a one-week history of abdominal pain, nausea, and vomiting. He had undergone orthotopic heart transplantation 8 years ago (biatrial technique) due to an idiopathic dilated cardiomyopathy, without any complications during the follow-up. He did not report fever or other symptoms of infection and he assured good treatment compliance with his immunosuppressive regimen.

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A physical examination revealed painful hepatomegaly and a biochemical test showed elevated bilirubin and aminotransferases.

Abdominal echography identified a suspected dilation of the bile duct. This was confirmed in computed tomography (CT) scan. In the upper CT images, thrombi were seen in both atria and the left ventricle (Fig. 1).

Transthoracic echocardiography revealed well-defined homogeneous masses in both atria with a jelly-like appearance and a thin capsule around them (Fig. 2). There was also a similar small mass in the left ventricular apex. A mild decrease in the left ventricular ejection fraction was also present.

The differential diagnoses for a cardiac mass, especially in an immunocompromised patient, included a cardiac lymphoma, a pericardial cyst, a cardiac primary tumor or a cardiac metastasis. In this case, there were various images, so it was also considered the diagnosis of cardiac thrombosis, while infectious vegetations due to the location of the lesions were less probable.

We initially started the patient on high doses of methylprednisolone, for a possible lymphoma, and anticoagulant therapy. We performed a complete assessment of the patient using imagery, infectious, hematologic and autoimmune analyses. Potential thrombophilia, cancer disease, or infection were excluded, so methylprednisolone was discontinued.

Cardiac magnetic resonance after a few days was also performed and it confirmed the suspected diagnosis of cardiac thrombi (no late gadolinium enhancement) which at that time after anticoagulant therapy were smaller (Fig. 3).

The lesions resolved progressively in the two following months with acenocoumarol only.

Three months after the diagnosis, the patient returned to the Emergency Department with cardiac failure symptoms. The thrombi were smaller but the left ejection fraction was severely reduced. Under the suspicion of cardiac rejection, an endomyocardial biopsy and coronary angiography were performed. No signs of cellular rejection were found, but the coronary angiography showed a diffuse and severe transplant vasculopathy disease. Treatment for humoral or antibody rejection with intravenous glucocorticoids and plasmapheresis was initiated, but the patient finally passed away two days later due to pulseless electrical activity.

Discussion

Cardiac thrombosis is a rare complication of heart transplantation and it usually presents as an incidental finding during follow-up. Hemostatic alterations, cardiac arrhythmias, graft rejection, operative technique and anatomic changes after transplant can contribute to thrombo formation.

The cases described in the literature are very rare but they are more common in the enlarged left atrium of cardiac allograft, not always associated with left atrial size, left ventricular ejection fraction, pulmonary artery pressure, or previous episodes of rejection.

Medical management with anticoagulants either with vitamin K antagonist or direct oral anticoagulants are feasible.
This case described a patient with a heart transplant who some years after surgery presented with cardiac masses and heart failure symptoms. In the end, cardiac thrombi were the final diagnosis with an adequate response to anticoagulant therapy.

These findings could also appear in the context of cardiac humoral rejection due to the activation of humoral immunity with antibody-dependent cytotoxicity, cytokine- and chemotactrant-mediated homing, circulating monocyte recruitment, and activation of the clotting process by the coagulation cascade.

Therefore, doctors should be aware of the frequency of this type of thromboembolic phenomenon in cardiac transplants because of its potential clinical and prognostic implications.

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