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Case Report Open Access

Cardiac Tumor in a 15-Year-Old Patient

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Abstract

Tumors of the heart are a very rare disease in cardiology practice. They are more frequently benign. Neonatal diagnosis is possible, but the accidental late discovery of a cardiac mass remains the most common situation. We report a case of a cardiac tumor in a 15-year-old patient symptomatic of palpitations. The belonging of the tissue to the cardiac muscle was confirmed on echocardiography and on other radiological findings. Regular monitoring was chosen at first then surgical resection was decided as an increase in the tumor's size was noted on the echocardiographic control.

Keywords: Arrhythmia; Children; Cardiac tumor; Ventricular tachycardia

Introduction

Heart tumors in children are rare. They are mainly benign. They are often symptomatic, but the clinical signs are not very specific. Echocardiography is the key tool to the diagnosis, although in multiple cases we are led to make use of other imaging techniques such as CT-scan and MRI. Advances in pediatric cardiac surgery now permit the most complete removal of these tumors, which, if not treated, can have serious hemodynamic or rhythmic repercussions.

Case Report

We report the case of a 15-year-old patient with no previous history who presented to the emergencies for palpitations. His hemodynamic state was stable. The first ECG, had shown a ventricular tachycardia at 200 beats per minute, reduced by cordarone. 2nd ECG showed a left atrial hypertrophy, an incomplete right branch bundle block with apico-lateral negative side T waves and poor R wave progression (Figure 1).

Transthoracic and transoesophageal echocardiography showed a dilated globular left ventricle (indexed DTD at 37 mm/m^2) with a preserved overall systolic function (54%). A hyperechoic apical pan-myocardial mass of 64 mm × 37 mm was noted. right cavities were normal (Figure 2).

A thoracic CT-scan confirmed the presence of a tissular mass in the apex and the left ventricular wall, with a heterogeneous faint contrast enhancement (Figure 3).

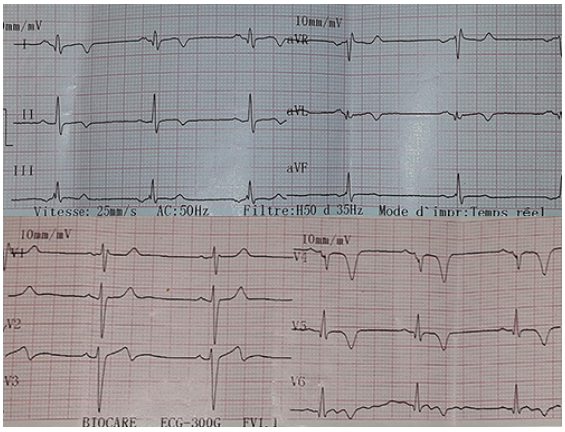

Figure 1: ECG post cordarone showing a left atrial hypertrophy, an incomplete right branch bundle block with apico-lateral negative side T waves and poor R wave progression.

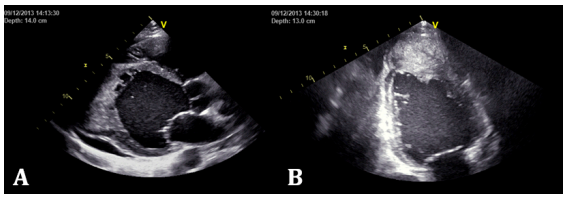

Figure 2: Transthoracic echocardiography showing an apical left ventricular mass. Parasternal long axis view (A) and apical 4 Chamber view (B).

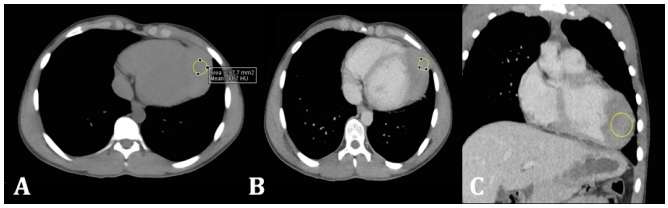

Figure 3: Thoracic CT-scan showing an apical tissular mass. before (A) and after (B-C) contrast injection.

On cardiac MRI the mass had a hyposignal on T1 weighted images and hypersignal on T2 (Figure 4).

A biopsy for antomopathological purpose was impossible and the final decision was not to treat the mass surgically but rather to monitor the patient periodically and to follow the tumor evolution. The patient was therefore placed under cordarone and beta-blocker. After 2 years' time, a checkup was performed: at the Holter, there was no rhythm disorder but echocardiographically there was an increase in tumor diameters reaching 70 mm × 45 mm. The surgical removal of the mass was therefore decided.

Discussion

Tumors of the heart are uncommon in children, their incidence in

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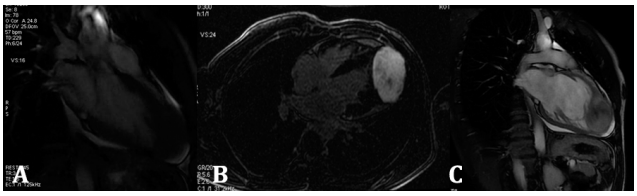

Figure 4: Cardiac MRI before gadolinium injection (A), T1 (B)and T2 (C) weighed images.

some autopsy series is less than 0.03% and doesn't exceed the 0.3% in ultrasound series [1,2] but even if they are not frequent enough, They hold an important place in pediatric cardiology.

10% of the cardiac tumors in children are malignant with a tenfold frequency of metastasis. In children aged 1 to 16 years, rhabdomyomas are by far the most frequent type, accounting for nearly 80% of tumors in the Toronto series and then at about 15% each, comes fibroma, Myxoma teratoma and more rarely, hemangioma, mesothelioma and hamartoma. However, being neither operated nor biopsied, they often remain without a proper histological diagnosis [3-6], as is the case of our patient.

The discovery in a patient of an intracardiac mass on the occasion of an ultrasound exam is a common situation since the clinical signs are often aspecific. In fact, the presentations are very polymorphic and often insidious [7]. The symptoms depend on the location and extension of the tumor and are more correlated with the anatomical localization rather than the histological type [8].

Under certain circumstances, cardiac symptoms may be present. They are of hemodynamic, embolic or rhythmic order. Rhythmic troubles are not uncommon, from seemingly benign extrasystolia, to ventricular tachyarrhythmias of fibroids or hamartomas of the conduction tissue. Atrial tumors, such as myxoma and sarcoma, can produce a wide variety of supraventricular arrythmias, including atrial fibrillation, atrial flutter, and ectopic atrial tachycardia. Tumors located in the atrioventricular node region can be discovered by atrioventricular conduction disorders, including complete heart block. Tumors of the ventricles, such as fibroids, may cause premature ventricular contractions, ventricular tachycardia, ventricular fibrillation, and sudden cardiac death.

The diagnosis of cardiac tumors requires a set of complementary exams. The electrocardiogram (ECG) and Holter are almost always abnormal and are therefore valuable tools. Echocardiography remains the key diagnostic exam, allowing to explore the cardiac cavities, to locate the tumor, to study the effect of the mass on systolic function, and to give a clear idea of the tumor's impact on the hemodynamic state.

Facing a common localization and a common ultrasound tumor aspect, the diagnosis does not usually require further exploration. On the other hand, a diagnostic problem may arise, as in the case reported and we are often led to make use of other imaging techniques such as CT-scan and MRI [9-12].

In fact, MRI plays an important role as it offers the advantage of a high tissue resolution, with a correct temporal resolution allowing dynamic acquisitions after injection, without causing irradiation to the patient. T1 and T2 sequences may provide evidence for diagnosis, such as the detection of a fat component in favor of a lipoma, or evidence of signal heterogeneity in a myxoma containing foci Hemorrhagic lesions and/or calcifications [13].

Surgery is the treatment of choice, it seems to be safe and technically feasible. The only contraindication to a conservative surgery is an invasion of the myocardium by the tumor mass, in which case the only curative therapeutic option remains the heart transplant. Primitive cardiac tumors which are candidates for surgical resection even in the first days of life has generally a good prognosis given the rapidity of the postoperative resumption of the normal cardiac function [14].

Conclusion

Tumors of the heart are uncommon in children. Their diagnosis is often delayed due to the non-specificity of the symptoms and is based on a bundle of clinical and radiological arguments. Echocardiography is the first-line examination tool. The revealing complications are of hemodynamic, embolic and rhythmic order. Surgical resection is the treatment of choice.

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