Case report - Cardiac general

Right ventricle mass in a woman discovered after preeclampsia

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Abstract

Cardiac masses are discovered occasionally. They are represented by thrombi, vegetations and tumors, primary or metastatic. The most frequent cardiac tumor is myxoma. The coincidence of pregnancy and a primary cardiac tumor is extremely rare. Only a few case reports of heart tumors during pregnancy are presented in the literature. The case of a young woman with the initial echocardiographic diagnosis of right ventricle mass is reported.

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1. Introduction

Cardiac masses are discovered occasionally; in rare cases they may cause symptoms such as heart failure or embolism. They are represented by thrombi, vegetations and tumors, primary or metastatic. Primary cardiac tumors are rare. The most frequent cardiac tumor is myxoma, which by itself represents about 50% of all primary cardiac neoplasms [1]. Approximately 75–85% of myxomas originate in the left atrium and 15–20% in the right atrium. Only rare cases have been reported of myxomas originating in the left and right ventricles (5%) [2]. Myxomas originating from the right ventricles may often cause obstruction of the right ventricle outflow tract (RVOT) [3]. Diagnosis is easily performed with echocardiography. The coincidence of pregnancy and a primary cardiac tumor is extremely rare [4]. Only a few case reports of heart tumors during pregnancy are presented in literature. These are usually left-sided tumors, involving left atrium mostly myxomas [5, 6], but there are described cases of osteosarcomas [7], rhabdomyomas [8] or sarcomas [4]. We present the case of a young woman admitted to our institute 30 days after labor with the initial echocardiographic diagnosis of right ventricle mass.

2. Clinical case

A 41-year-old woman who, during pregnancy, suffered from preeclampsia after vaginal delivery performed cardiological evaluation and two-dimensional color flow Doppler echocardiography that revealed a right endoventricular mass partially obstructing the RVOT, so she was admitted to our division 30 days after labor with initial diagnosis of ‘right endoventricular mass’. At the moment of admission she was asymptomatic. She had no history of major systemic or cardiovascular disease. An electrocardiogram showed normal sinus rhythm. She was not receiving pharmacological therapy. Transthoracic echocardiography was performed and showed normal left atrial and ventricular size, mild right ventricular enlargement, and the presence of an echo dense mass (49×30 mm) at the RVOT, partially obstructing and generating a transvalvular systolic gradient of 58 mmHg. A cardiac computed tomography (CT) was performed that did not show major atherosclerotic coronary disease and confirmed the presence in the right ventricle of a multilobated, with low attenuation, mass (66.4×32×31 mm) with attachment at the mid portion of the interventricular septum, anterosuperiorly from the moderator band with smooth edges that partially obstructed the RVOT (Fig. 1a). The cardiac CT-scan was not able to determine the nature of the mass; so cardiac magnetic resonance imaging (MRI) was performed that confirmed the presence of a mass (6×3×3 cm) that partially obstructed the RVOT. The mass was isointense on T1 (Fig. 1b) and hyperintense on TR with progressive and slow enhancement. A total body CT-scan was performed with no additional pathological findings. These findings were suggestive of myxoma but neither CT-scan nor MRI were able to confirm this diagnosis. On the fourth day we performed cardiac surgery. We performed median sternotomy and cardiopulmonary bypass using aortic and bicaval cannulation. Warm blood cardioplegia was used. Right atriotomy was performed and through the tricuspid valve the voluminous gelatinous mass attached to the moderator band that partially obstructed the RVOT was visible (Fig. 2a). We proceeded to complete excision of the mass that was sent to the pathologist. On gross examination, the mass...
Cardiac tumors usually present with specific signs or symptoms related to their anatomical location, size, and effect, on the surrounding structures rather than to their histological types. However, they are discovered occasionally by routine echocardiography, because they are often misdiagnosed as other more common diseases. Approximately 75% of all cardiac tumors are benign histologically. Most benign cardiac tumors are myxomas. Cardiac myxomas comprise approximately 50% of the total in most adult clinical case series and up to 90% in surgical case series [9]. Right ventricular tumors are extremely rare and they can frequently cause obstruction of the RVOT. By applying the approximate frequencies of cardiac tumors categorized by type and site, statistically, an intracavitary right ventricular outflow tract tumor is 70–140 times more likely to be malignant than benign; furthermore, if it is a primary cardiac tumor, it is approximately two times more likely to be a sarcoma than a myxoma [9]. Successful treatment for benign cardiac tumors is usually achieved by surgical resection. Complete excision is not often possible; it depends on their size or their extent and invasion of cardiac structures [10]. Surgery for primary malignant tumors is, however, much less successful as complete resection is usually not possible. In any case, the radiological technology is extremely helpful and can describe accurately extension, anatomy and eventual infiltration of cardiac structure. Radiologic imaging can also help exclude the metastatic origin of the cardiac tumor and eventually metastatic invasion of the primary tumor; these findings can help differential diagnosis but not always concluding. Nevertheless, it can help the correct preoperative evaluation and helps the surgeon to select the most appropriate surgical approach. Few cases are described in the literature of cardiac tumors diagnosed during pregnancy. Surgical treatment usually is limited at highly symptomatic patients. Rare cases of cardiac surgery are reported, performed with cardiopulmonary bypass and with good outcome for patients and babies, that are reported delivered before or after cardiac surgery. In most cases it is good practice to wait until delivery and thereafter proceed to surgery. The surgical approach should be determined by clinical behavior of cardiac tumors [5].

3. Discussion

Cardiac tumors usually present with specific signs or symptoms related to their anatomical location, size, and effect, on the surrounding structures rather than to their histological types. However, they are discovered occasionally by routine echocardiography, because they are often misdiagnosed as other more common diseases. Approximately 75% of all cardiac tumors are benign histologically. Most benign cardiac tumors are myxomas. Cardiac myxomas comprise approximately 50% of the total in most adult clinical case series and up to 90% in surgical case series [9]. Right ventricular tumors are extremely rare and they can frequently cause obstruction of the RVOT. By applying the approximate frequencies of cardiac tumors categorized by type and site, statistically, an intracavitary right ventricular outflow tract tumor is 70–140 times more likely to be malignant than benign; furthermore, if it is a primary cardiac tumor, it is approximately two times more likely to be a sarcoma than a myxoma [9]. Successful treatment for benign cardiac tumors is usually achieved by surgical resection. Complete excision is not often possible; it depends on their size or their extent and invasion of cardiac structures [10]. Surgery for primary malignant tumors is, however, much less successful as complete resection is usually not possible. In any case, the radiological technology is extremely helpful and can describe accurately extension, anatomy and eventual infiltration of cardiac structure. Radiologic imaging can also help exclude the metastatic origin of the cardiac tumor and eventually metastatic invasion of the primary tumor; these findings can help differential diagnosis but not always concluding. Nevertheless, it can help the correct preoperative evaluation and helps the surgeon to select the most appropriate surgical approach. Few cases are described in the literature of cardiac tumors diagnosed during pregnancy. Surgical treatment usually is limited at highly symptomatic patients. Rare cases of cardiac surgery are reported, performed with cardiopulmonary bypass and with good outcome for patients and babies, that are reported delivered before or after cardiac surgery. In most cases it is good practice to wait until delivery and thereafter proceed to surgery. The surgical approach should be determined by clinical behavior of cardiac tumors [5].

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