

Interactive CardioVascular and Thoracic Surgery

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Interact CardioVasc Thorac Surg 2005;4:123-125; originally published online Feb 7, 2005;

DOI: 10.1510/icvts.2004.093229

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Case report - Cardiac general

Video-assisted cardioscopy in a patient with left ventricular tumor of unknown etiology

Manfred Junemann-Ramirez^{1,*}, Gemma Conn¹, Andrew Marshall², Adrian Marchbank¹

¹Department of Cardiothoracic Surgery, Southwest Cardiothoracic Centre, Plymouth, PL6 8DH, UK

²Department of Cardiology, Southwest Cardiothoracic Centre, Plymouth, PL6 8DH, UK

Received 1 July 2004; received in revised form 20 January 2005; accepted 21 January 2005

Abstract

Ventricular tumors are a rare clinical entity with limited possibilities for excision diagnosis. For benign conditions surgical excision is the treatment of choice. A case presenting as a clinical conundrum with left ventricular tumor and complex past medical history is discussed. Aortic transvalvular video-assisted cardioscopy was used for removal and definitive diagnosis.

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Keywords: Left ventricular tumor; Videocardioscopy; Video-assisted cardiac surgery

1. Introduction

Intracardiac tumors are a rare clinical entity on which the mainstay of diagnosis relies on clinical history and imaging techniques. Malignant tumors very rarely justify surgical intervention and minimally invasive approaches are required in cases of uncertain diagnosis. The use of the videoscope via an aortic transvalvular approach appears ideally suited under these circumstances.

2. Case report

A 60-year-old male was admitted to a medical ward presenting with signs and symptoms of severe left ventricular failure. His chest X-ray on admission confirmed pulmonary oedema. ECG showed a known right bundle branch block. Trans thoracic echocardiography showed a pedunculated large left ventricular mass 2.0×2.5 cm, originating from the free wall of the left ventricle, with globally impaired left ventricular function. Transoesophageal echo confirmed the mass in the left ventricle and suggested a further mass in the apex of the right ventricle of approximately 2 cm in diameter. Computed tomography and magnetic resonance imaging demonstrated both masses with no further abnormalities (Fig. 1 a,b). Four months previously he was admitted on a surgical ward with an episode of acute right lower limb ischaemia which was treated conservatively. Five years previously he had been treated for acute promyelocytic leukaemia with chemotherapy within the AML 12 Protocol, including Anthracycline. A Hickman Line was inserted at that time without complications. During this time he developed severe fungal chest infection with multiple pulmonary irregular cavitating nod-

ules visualised on CT Scan. Due to his past medical history the possibility of a primary malignant cardiac tumor was raised and could not be excluded with the findings made on the diagnostic imaging. As the prognosis for malignant cardiac tumors is uniformly reported to be poor the patient was anticoagulated and reviewed 3 months later. At this stage a repeat transoesophageal echocardiogram showed no change in the left ventricular mass and the mass in the right ventricle was no longer visualised. Embolisation of the right ventricular mass was assumed to have occurred indicating the likely diagnosis of an intracavitary thrombus. This justified surgical intervention in order to prevent further complications from potential embolisation of the left ventricular mass and to obtain definite tissue diagnosis.

Median sternotomy was performed. Full heparinization cardiopulmonary bypass between a two-stage right atrial venous cannula and a 24-aortic return cannula was performed. The patient was cooled to 34 °C. Myocardial protection established with single shot antegrade cold blood cardioplegia via the aortic root. Access to the intracavitary tumor was achieved via a transverse aortotomy (Fig. 2a), thus avoiding the far more invasive approach via a ventriculotomy with its potential complications. A 10 mm 0° Storz® rigid thoracoscope was introduced through the aortic valve to visualise the cavity of the left ventricle. VATS instruments were used for exploration although they proved to be rather long in this situation. A 3×2 cm mass with a thin stalk attached to a trabeculum of the free wall was identified and transfixated facilitating the approximation of the mass close to the aortic valve (Fig. 2b). The mass was excised and a sample was sent for frozen section revealing no malignancy. The remainder of the left ventricular cavity was re-explored and no further lesion was identified. His postoperative recovery was uneventful.

*Corresponding author. Tel.: +44 (1752) 517527; fax: +44 (1752) 763830.

E-mail address: manfred.junemann@gmx.net (M. Junemann-Ramirez).

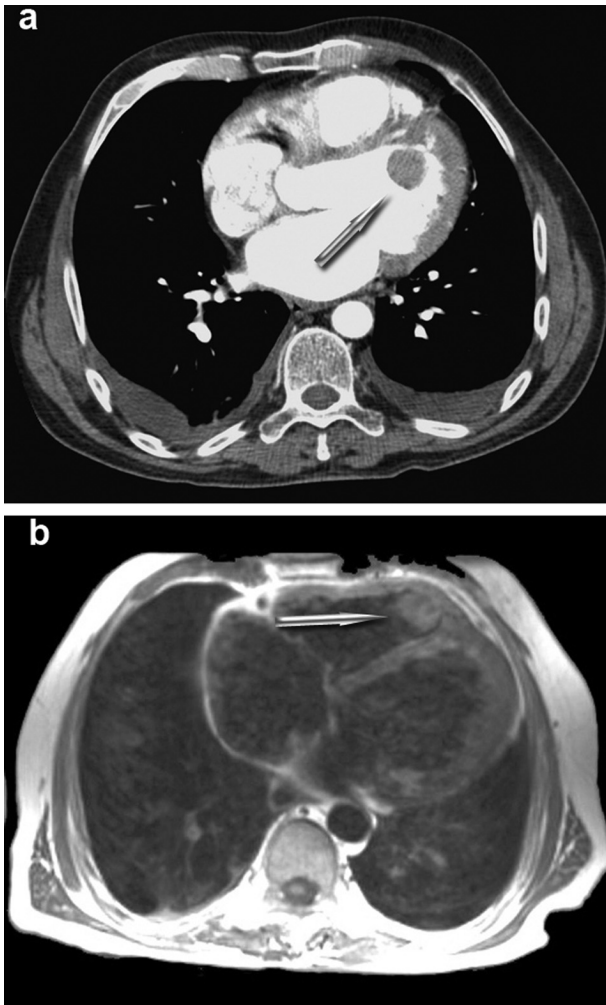


Fig. 1. CT-Scan (a) and MRI (b) demonstrating tumor in the left and right ventricular cavity, respectively (arrows).

Pathological examination revealed a calcified thrombus. Microbiology was negative.

3. Discussion

Primary cardiac tumors are a rare clinical entity. The differential diagnosis includes thrombus, myxoma, lymphoma and sarcoma. The past medical history of this patient raised the possibility of the spread of lymphoma. No association between the chemotherapy received and primary cardiac tumors could be found in the literature. Only 25% of primary cardiac tumors are reported to be malignant. In a large postmortem series the overall incidence varies between 0.0017 and 0.03% [1]. Diagnosis relies on clinical history and imaging techniques and can be misleading [2]. Very rarely tissue diagnosis may be obtained by cardiac catheterisation. Survival rates for malignant cardiac tumors are uniformly poor regardless of treatment strategies which may include major surgery [3]. On the other hand the documented poor ventricular function of this patient could explain an increased risk of intraventricular thrombus formation. Severely impaired ventricular function due to car-

diotoxicity of Anthracycline requiring cardiac transplant has been described [4]. A histologically confirmed diagnosis was therefore crucial for surgical decision making.

The use of video assisted cardioscopy has recently reported to be very useful in situations where minimally invasive approaches are required without compromising the quality of the intervention. This seems to be particularly useful in cases with uncertain diagnosis where the risks of a more invasive approach, such as ventriculotomy, might outweigh the possible benefits [5]. Patients with already impaired ventricular function may especially benefit from this approach. Video assisted cardioscopy has previously been used for a variety of cardiac surgical procedures including removal of primary left ventricular myxoma [6] and removal of left ventricular thrombus [7] where the benefits of this approach have been well described (for review see Reu-

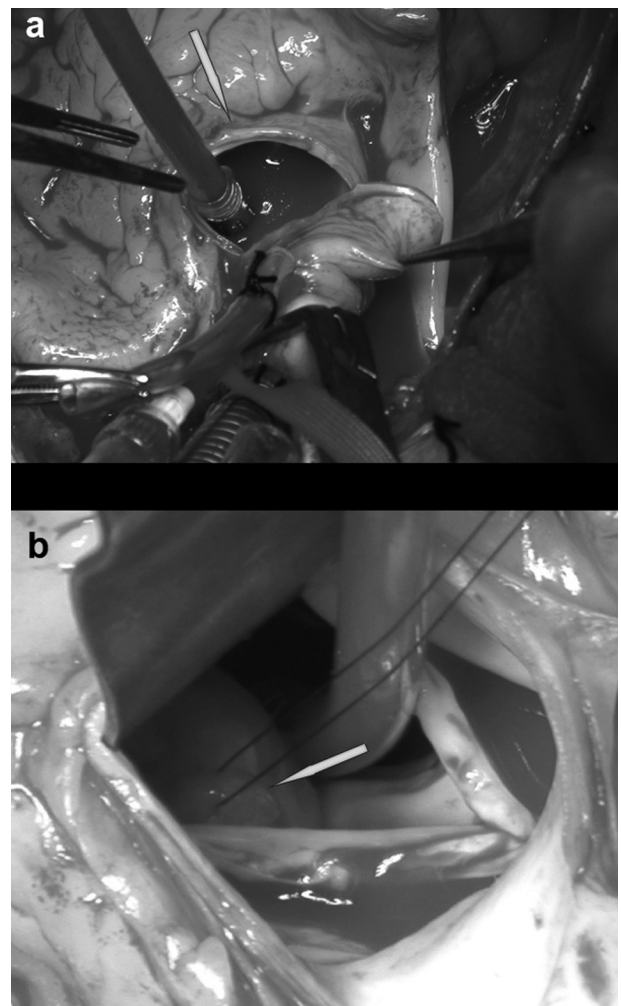


Fig. 2. (a). Intraoperative image illustrating the approach to the left ventricular tumor via a aortotomy avoiding incision of the left ventricular wall. For orientation: The arrow indicates the area of the right coronary cusp; the vent being introduced through the aortic valve into the left ventricular cavity; cardioplegia line and aortic return canula visible at the inferior aspect of the image. (b). Closeup of the transvalvular view with tumor transfixed (arrow), left ventricular vent in situ and retraction of the right coronary cusp leaflet of the aortic valve.

thenbach et al. [8]). Further developments of this technique could include the use of a limited upper sternotomy as described for minimally invasive aortic valve replacement [9] and in effect no publication using this technique in conjunction with video assisted cardioscopy has been published to our knowledge. However, the authors experience in this approach was limited therefore precluding consideration of this potential route.

In conclusion this case report highlights the difficulties of reconciling the need of obtaining tissue diagnosis for appropriate decision making with the magnitude and potential complications of the diagnostic procedure itself. This is especially relevant in cases of potential malignant disease with limited prognosis. Further development of this technique will be dependent on centres with relevant expertise in this field.

Acknowledgements

The authors would like to acknowledge Dr M.D. Hamon and Dr A. Prentice, Consultant Haematologists, for reviewing this paper.

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