

Giant myxoma causing right ventricular outflow tract obstruction

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Atrial cardiac myxoma is the most common benign cardiac tumour. Atrial myxoma most commonly arises from the left atrium and, less frequently, from the right atrium or both ventricles. Cardiac myxoma arising from the tricuspid valve is rare. These tumours can present with right heart failure as a result of right ventricular outflow tract obstruction. A high index of suspicion and appropriate investigations are necessary for making the correct diagnosis. Fatal complications such as embolisation and obstruction of the outflow tract and other intracardiac structures make prompt surgical intervention necessary. We report on a patient with a rare type of giant myxoma arising from the tricuspid valve. He underwent successful operation with en-bloc removal of the tumour, while preserving the integrity of the tricuspid valve.

Introduction

Cardiac myxomas are rarely located on the tricuspid valve. We report on a man who had a giant myxoma and presented with right heart failure. He underwent successful operation with a tricuspid valve conservation technique.

Case report

A 46-year-old man was admitted in December 2009 with a 1-month history of shortness of breath and ankle oedema. Chest radiograph showed cardiomegaly and bilateral pleural effusion (Fig 1a). Transthoracic echocardiogram showed a large mass in the right ventricle, extending to the right ventricular outflow tract. Right ventricular function was slightly impaired. Computed tomographic scan revealed a large mass in the right ventricular outflow tract (Fig 1b). The patient was admitted to the intensive care unit for close monitoring and intravenous dopamine infusion.

The patient underwent urgent surgical excision of the mass through a median sternotomy incision. Cardiopulmonary bypass was conducted under moderate hypothermic conditions via aortic and bicaval cannulation. The heart was stopped with cold blood cardioplegic solution. An incision was made in the right atrium and the main pulmonary artery. The tumour measured 8 x 5.5 cm and was attached to the ventricular surface of the anterior leaflet of the tricuspid valve by a narrow stalk. The tumour extended from below the tricuspid valve to the right ventricular outflow tract (Fig 2a). The tumour was removed en bloc and the attachment to the tricuspid valve leaflet was excised (Fig 2b, 2c). The excised portion of the leaflet was re-approximated and a tricuspid annuloplasty ring was inserted. Post-bypass transoesophageal echocardiogram showed complete removal of the tumour, mild tricuspid regurgitation, and improved right ventricular function. The patient recovered uneventfully and was discharged 10 days after operation. The histology of the tumour confirmed the diagnosis of cardiac myxoma. The portion of the tricuspid valve that was resected with the tumour attachment demonstrated a clear resection margin.

Key words

Heart valve diseases; Myxoma; Tricuspid valve; Ventricular outflow obstruction

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Discussion

Atrial myxoma is the most common benign cardiac tumour in the heart. Approximately 75 to 85% of these tumours arise from the left atrium, 15 to 20% from the right atrium, and only 5% from the right or left ventricle.¹ Most myxomas arise from the inter-atrial septum in the vicinity of the fossa ovalis,² but they can occasionally arise from cardiac heart valves, such as the tricuspid and mitral valves.^{3,4} Cole et al⁵ reported that five of 11 patients had tricuspid myxomas arising from the atrial side of the valve. This patient had a large cardiac myxoma arising from the ventricular aspect of the tricuspid valve, extending to the right ventricular tract, causing right heart failure.

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Cardiac myxoma extending into the right ventricular outflow tract is a rare cause of right heart failure. Symptoms and signs include peripheral oedema, ascites, and shortness of breath as a result of right ventricular outflow tract obstruction.¹ Other differential diagnoses include right ventricular outflow tract obstruction caused by pulmonary embolism from thromboembolic diseases such as pelvic vein thrombosis, and tumour metastases or emboli from tumours arising from the abdominal or pelvic organs such as extension of tumour thrombus into the right heart from the inferior vena cava in renal cell carcinoma. Patients with atrial myxomas may also present with constitutional symptoms as a result of increased expression of mediators such as interleukin-6.^{6,7} The gold-standard non-

巨大黏液瘤導致的右心室出道梗阻

心房黏液瘤是最常見的良性心臟腫瘤，最常發生於左心房，右心房或左、右心室黏液瘤的病例較少，於三尖心瓣伸展出來的心房黏液瘤就更為罕見。由於這類腫瘤會導致右心室出道梗阻，患者可能會出現右心衰竭。醫生必需有高度警覺性及適當的檢查方針，才能作出正確的診斷。情況嚴重的病人或因心臟腫瘤阻塞左、右心室流出道或因阻塞心瓣誘發左或右心衰竭。腫瘤亦可能因遷移導致血管栓塞。本文報告一名患者接收手術割除從三尖心瓣伸展出來的心房黏液瘤，並成功運用三尖心瓣修補術保存其心瓣功能。

invasive diagnostic modality for such conditions is transthoracic or transoesophageal echocardiogram.

Echocardiogram enables preoperative

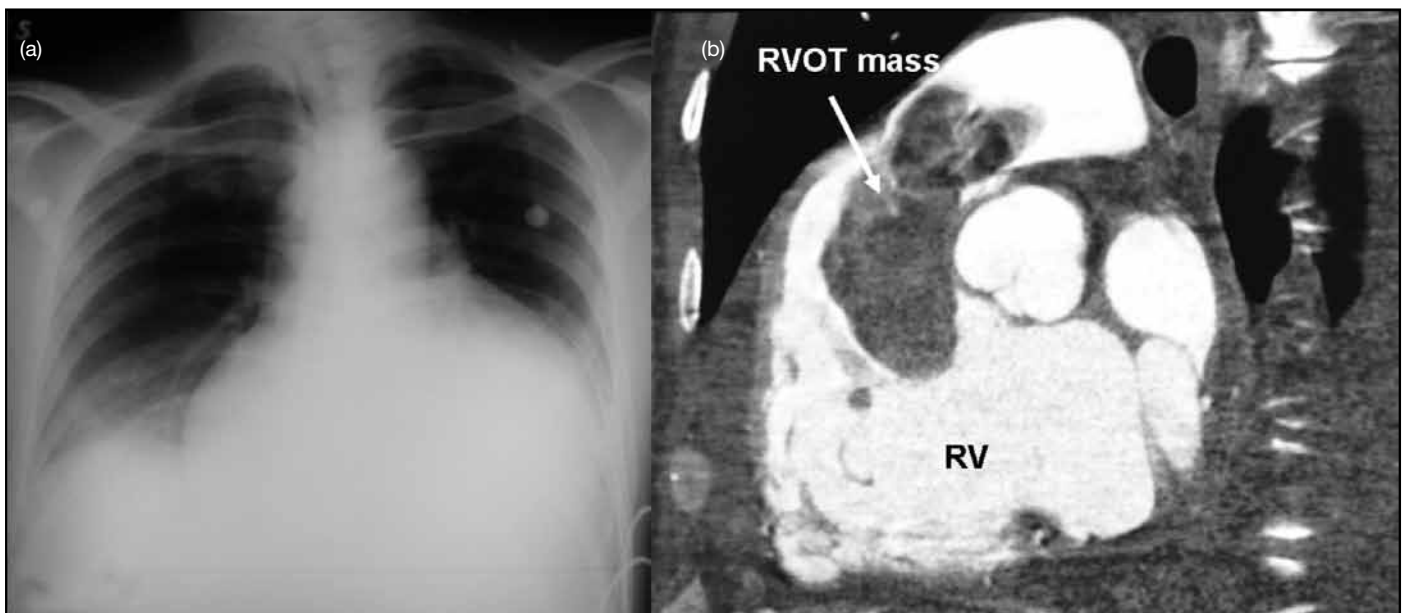


FIG 1. (a) A chest radiograph showing bilateral pleural effusion and cardiomegaly. (b) A computed tomographic image (sagittal section) showing a large mass in the right ventricular outflow tract (arrow)
RVOT denotes right ventricular outflow tract, and RV right ventricle



FIG 2. (a) Resection of the base of the myxoma and the tricuspid valve leaflet (arrow). (b) Repair of the tricuspid valve leaflet. (c) The resected specimen
TVS denotes tricuspid valve septal leaflet, and TV tricuspid valve leaflet

localisation of the tumour and the tumour attachment, and therefore facilitates the selection of the optimal surgical approach. Prompt treatment with surgical removal of the tumour under cardiopulmonary bypass is recommended, as embolisation or sudden obstruction of intracardiac structures and the ventricular outflow tract may cause serious

irreversible consequences. In this patient, the giant tumour was attached to the ventricular surface of the tricuspid valve anterior leaflet and, in view of the benign nature of the tumour, treatment by resection of the area of attachment of the myxoma followed by suture repair of the valve and annuloplasty was considered the most appropriate treatment option.

References

1. Mittle S, Makaryus AN, Boutis L, Hartman A, Rosman D, Kort S. Right-sided myxomas. *J Am Soc Echocardiogr* 2005;18:695.
2. Rey M, Tuñon J, Compres H, Rabago R, Fraile J, Rabago P. Prolapsing right atrial myxoma evaluated by transesophageal echocardiography. *Am Heart J* 1991;122:875-7.
3. Pessotto R, Santini F, Piccin C, Consolaro G, Faggian G, Mazzucco A. Cardiac myxoma of the tricuspid valve: description of a case and review of the literature. *J Heart Valve Dis* 1994;3:344-6.
4. Chakfé N, Kretz JG, Valentin P, et al. Clinical presentation and treatment options for mitral valve myxoma. *Ann Thorac Surg* 1997;64:872-7.
5. Cole DJ, Hendren WG, Sink JD, D'Amato PH. Myxoma attached solely to the tricuspid valve. *Am J Cardiol* 1989;64:546-7.
6. Seino Y, Ikeda U, Shimada K. Increased expression of interleukin 6 mRNA in cardiac myxomas. *Br Heart J* 1993;69:565-7.
7. Saji T, Yanagawa E, Matsuura H, et al. Increased serum interleukin-6 in cardiac myxoma. *Am Heart J* 1991;122:579-80.