

Right Atrial Cavernous Hemangioma

Abstract

Benign cardiac hemangiomas are rare tumors that may present in or out side of the heart, epicardium being the most common site. Echocardiography is the method of choice in diagnosing cardiac masses and though 3D TEE may seem to add exact information about the location, the time constraint in doing a comprehensive examination along with 3D rendering inside operation room may become an hindrance.

Keywords: Cardiac hemangioma, cardiac mass, 3D echocardiography for masses

A 56-year-old lady was transferred from a peripheral hospital to our center with a background history of lethargy and fatigue over last few years, intermittent atypical chest pain, and palpitations. She was also experiencing general light-headedness and had one episode of loss of consciousness while at her General Practitioner. She had no history of stroke or any other co-morbid illness. Symptoms related to superior vena cava (SVC) obstruction were not present. An exercise ECG stress test was performed which revealed a positive stress test suggestive of ischemia. A transthoracic echocardiogram (TTE) was performed that revealed a large (3 cm × 2 cm) well-circumscribed echodense sessile ovoid mass on the superior wall of the right atrium (RA), adjacent to the SVC, and interatrial septum. She had normal left ventricular and right ventricular systolic function. No significant valvular pathology was noted. Patient had trivial tricuspid regurgitation and pulmonary artery pressure was estimated as 28 mmHg with an assumption of right atrial pressure being 5 mmHg. Transesophageal echocardiogram (TEE) was not performed pre-operatively. A CT cardiac angiography revealed no coronary artery disease. CT cardiac angiography confirmed the presence of a relatively smooth surfaced sessile mass attached to the roof of the right atrium and superior aspect of the inter atrial septum with some indentation of SVC although no stenosis of SVC, with a probable diagnosis of atrial myxoma [Figures 1 and 2].

Sedative premedication was withheld on the day of surgery in view of her history of light-headedness and antibiotic prophylaxis given as per hospital protocol. Intravenous and arterial invasive lines were inserted under midazolam sedation. An 8.5 Fr sheath was inserted into the right internal jugular vein using Seldinger technique under ultrasound guidance and ensuring that the guide wire was not advanced too far down to the junction of SVC and RA. Induction and intubation were uneventful and TEE probe was inserted post intubation.

Prior to sternotomy, 2D TEE was performed and confirmed right atrial mass very close to the junction of SVC and RA [Figure 3, Videos 1 and 2]. 3D TEE imaging confirmed 2D TEE findings. However, no stalk was found to be attached to atrial wall.

The chest was opened through a midline sternotomy. The patient was systemically heparinized. Bicaval cannulation was performed and following cardioplegic arrest of the heart, the cardiac tumor was mobilized from the epicardial approach. To our surprise, the tumor was found in the region of Sondergards Groove external to the heart [Figure 4]. The mass extended into the pericardium but not through the atrial wall. The tumor was carefully excised and was able to be removed intact without entering the right atrium [Figure 5]. A small right atriotomy was made and upon inspection of RA, confirmed the absence of an intra-cardiac tumor extension. The patient was subsequently weaned off cardio-pulmonary

**Manikappa
Shashikanth,
Sandler Nicola¹,
Chen Yi¹,
Smith Julian^{1,2}**

Department of Anaesthesia and Perioperative Medicine, Monash Health, ¹Department of Cardiothoracic Surgery, Monash Health, Clayton, ²Department of Surgery, (School of Clinical Sciences at Monash Health), Monash University, Melbourne, Victoria, Australia

Submitted: 11-Apr-2019

Accepted: 02-Oct-2019

Published: 17-Jul-2020

Address for correspondence:

Dr. Shashikanth Manikappa, Anaesthesia and Perioperative Medicine, Casey Hospital, 62-70, Kangan Drive, Berwick, Melbourne - 3806, Victoria, Australia.

E-mail: smanikappa@gmail.com

Videos Available:
www.annals.in

Access this article online

Website: www.annals.in

DOI: 10.4103/aca.ACA_58_19

Quick Response Code:



How to cite this article: Shashikanth M, Nicola S, Yi C, Julian S. Right atrial cavernous hemangioma. Ann Card Anaesth 2020;23:335-7.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

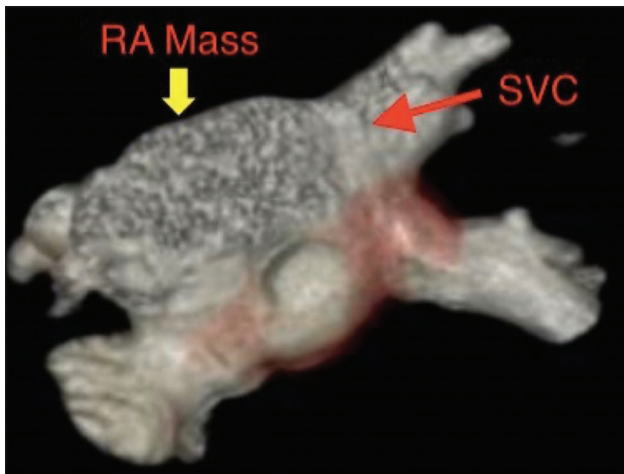


Figure 1: Pre-operative CT cardiac angiography with 3D view of the tumor

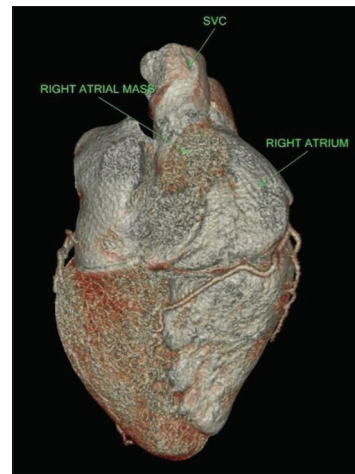


Figure 2: CT 3D reconstructed view showing relationship of the tumor, SVC, and RA

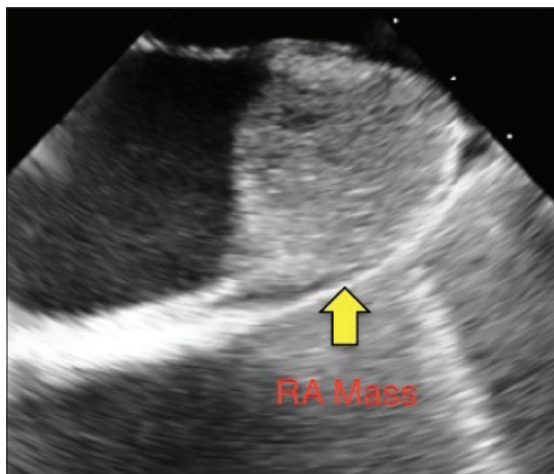


Figure 3: Intraoperative 2D TEE Bicaval view showing the RA mass

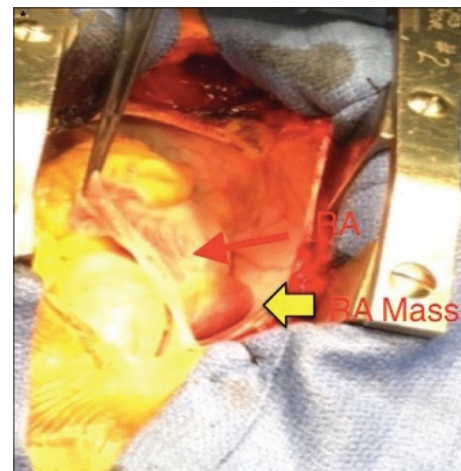


Figure 4: Intraoperative image following sternotomy

bypass and rest of her hospital stay was uneventful. All imaging modalities prior to surgery did not report any separation between the right atrium and the cardiac tumor or the tumor being outside RA. Tumor histopathology revealed a cavernous hemangioma. The patient underwent uncomplicated surgical excision of tumor and remained well at follow-up.

Discussion

Primary cardiac hemangiomas are rare, benign vascular tumors that have variable symptoms, presenting in any age group.^[1] It was first described in 1893.^[2] The epicardium is the most common location for cardiac hemangiomas.^[1] Symptoms vary from palpitations, arrhythmias to stroke. Right atrial masses can lead to RA enlargement, arrhythmias, functional tricuspid stenosis, right heart failure, and catastrophic pulmonary embolization resulting in sudden death. There is a mild predominance in females.^[2] Echocardiography is the imaging modality of choice for initial identification and location of cardiac tumors. CT scan and MRI can further help define the

pathology and exact location.^[3,4] However, with the advent of 3D TEE imaging, this provides a semi-invasive reliable tool for identification of the location of mass. In our case, based on preoperative scanning it was assumed to be an intra-cardiac mass. In a review of 56 cardiac hemangioma cases, where the tumor may be present in more than one site, 35.7% of them were found in right ventricle, 33.9% in left ventricle, 23.2% in right atrium, 10.7% on the interatrial septum, 10.7% on the interventricular septum, 7.1% in the left atrium and multiple extensive tumors in 30.4%.^[4]

From the anesthetic point of view, hemodynamic disturbances commonly occur with intracardiac tumors; hence, attention needs to be paid to premedication, patient position and anesthetic induction. Detailed history of symptoms and exacerbations of symptoms with position or activity is required. This tumor was thought to be intracardiac and the initial intraoperative 2D TEE after induction and intubation was no different [Figure 3, Videos 1 and 2], only to find this was extra cardiac



Figure 5: Atrial hemangioma following operative excision

on mobilization of the tumor following cardioplegic arrest of the heart. 3D TEE images were recorded. Retrospective 3D TEE evaluation showed no obstruction in SVC or to its flow as in Video 3 (TEE 3D Mid-Esophageal [ME] bicaval View from SVC end) and Video 4 (TEE 3D ME bicaval View from IVC end). On retrospective analysis of 3D TEE, particularly in Videos 4 and 5 (3D TEE bicaval view with cropping of right atrium), it is apparent that the tumor was external to right atrium as the separation between the mass and the right atrium appears more distinct. Compressive or obstructive effects of any cardiac mass regardless of the location is of significant concern; however, knowing the accurate location helps better prepare for hemodynamic disturbances. Patients with right ventricular dysfunction and pulmonary hypertension will benefit from right ventricular and pulmonary artery pressure monitoring. However, if the cardiac tumor location is incorrectly thought to be in RA or right ventricle, Swan-Ganz catheter is not used for such monitoring due to the risk of embolization. Fortunately, in our patient the right ventricle and pulmonary pressures were normal as determined from pre-operative TTE.

In summary, this case highlights some of the inherent difficulties in interpretation of 3D TEE imaging, however,

it is often the race against time in such cases where heparinization and institution of cardiopulmonary bypass occurs reasonably quick. The 2D TEE failed to detect the extracardiac location of the tumor whereas virtually cropping on 3D TEE and visualizing the region through right atrial side demonstrated that the tumor was not present inside the RA. A hemangioma, which appears to be located inside the RA on pre-operative 2D TTE and intra-operative 2D TEE imaging may actually be extracardiac in location. This finding could be confirmed retrospectively on 3D TEE in our patient. The time constraint on anesthesiologist to perform a comprehensive TEE examination along with the responsibility of monitoring the hemodynamics of an anesthetized patient with a right atrial tumor is challenging.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Botha J, Ihlberg L, Elhenawy A, Abbott M, Butany J, Paul N, *et al.* A Giant cavernous hemangioma of the heart. *Ann Thorac Surg* 2010;90:293-5.
2. Esmailzadeh M, Jalalian R, Maleki M, Givtaj N, Mozaffari K, Parsaee M. Cardiac cavernous hemangioma. *Eur J Echocardiogr* 2007;8:487-9.
3. Contrafouris C, Kanakis M, Milonakis M, Azariadis P, Chatzis A. Cavernous hemangioma of the right atrium. *Clin Case Rep* 2016;4:1068-9.
4. Kojima S, Sumiyoshi M, Suwa S, Tamura H, Sasaki A, Kojima T, *et al.* Cardiac hemangioma: A report of two cases and review of the literature. *Heart Vessels* 2003;18:153-6.