

Echo Singapore 2018

A Tale Of 3 Masses

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History

- 55 year old gentleman presented with retrosternal chest pain while playing badminton a week prior to admission, resolved after an hour.
- Had recurrent chest discomfort subsequently and consulted his family physician.
- Referred to Emergency Department for abnormal ECG.
- No past medical history.
- No significant cardiovascular risk factor.

Parameters On Admission

- Afebrile, blood pressure 112/75 mmHg, pulse rate 95 bpm, regular rhythm
- SpO₂ 97% on room air
- Heart sounds dual
- Chest clear
- Troponin I 160 → 1076 → 2055 → 1470 ng/L
- HDL 1.19 mmol/L, LDL 2.38 mmol/L

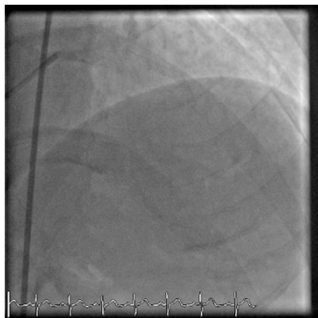
Electrocardiogram On Presentation



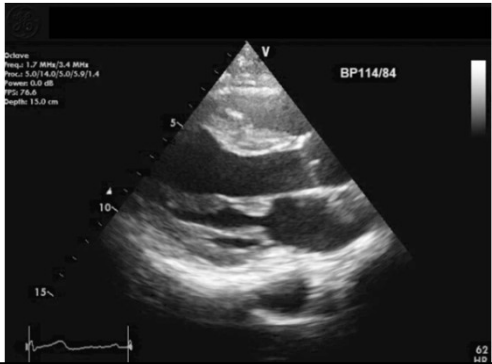
Coronary Angiogram



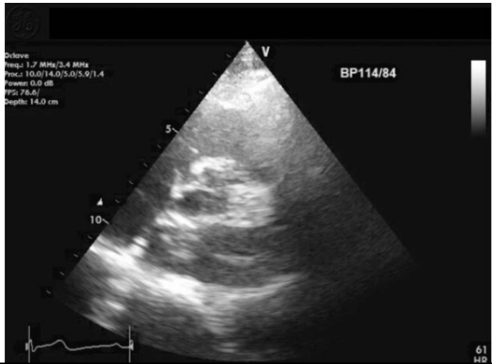
Post PCI



Echocardiogram On D2 Of Admission



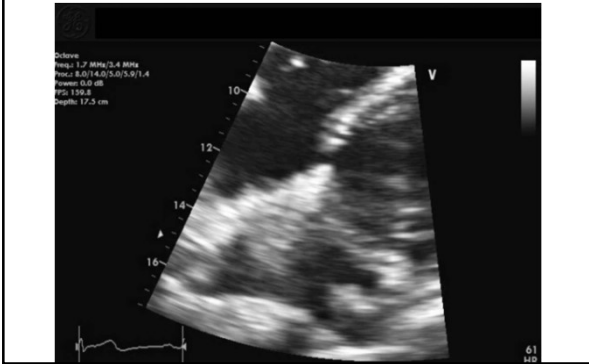
Echocardiogram On D2 Of Admission



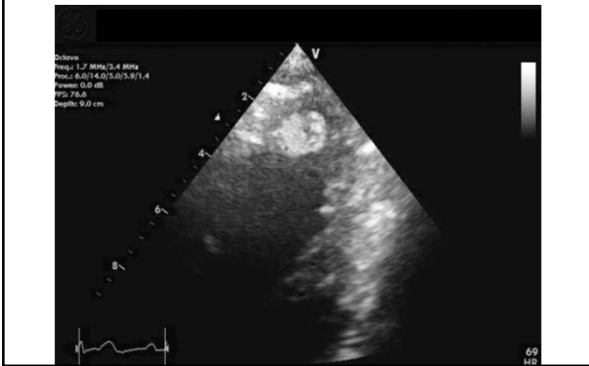
Echocardiogram On D2 Of Admission



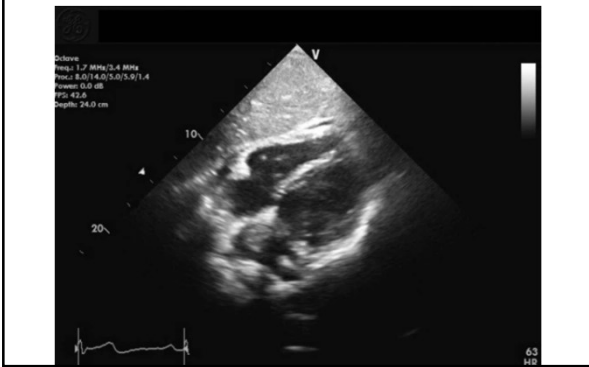
Echocardiogram On D2 Of Admission



Echocardiogram On D2 Of Admission



Echocardiogram On D2 Of Admission



Question 1

What are these masses?

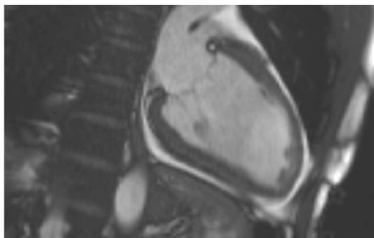
1. Left atrial thrombus, left ventricular thrombi
2. Left atrial tumour, left ventricular thrombi
3. Left atrial thrombus, left ventricular tumours
4. Left atrial tumour, left ventricular tumours
5. Left atrial vegetation, left ventricular thrombi

Question 2

What would you do next to evaluate these 3 masses?

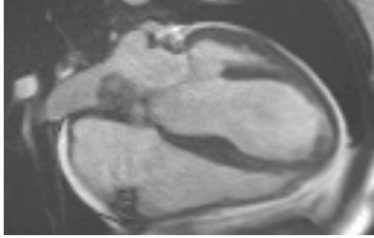
1. Repeat transthoracic echocardiogram.
2. Do transesophageal echocardiogram.
3. Do cardiac CT.
4. Do cardiac MRI.
5. Do PET scan.

Cardiac MRI Was Performed



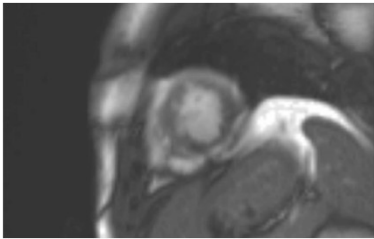
2-chamber cine showing thin and akinetic anterior LV wall and apex with 2 masses in the apical cavity.

Cardiac MRI



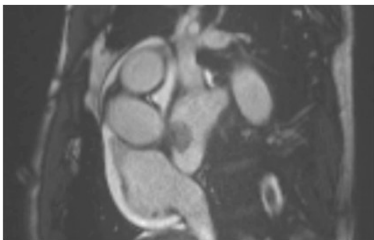
Modified 4-chamber cine showing left atrial mass and a mass in the LV apical cavity.

Cardiac MRI



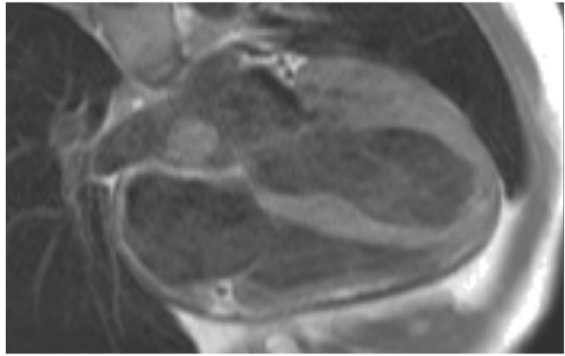
Apical short axis cine showing a distinct mass at 11 o'clock and another mass just visible at 5 o'clock.

Cardiac MRI

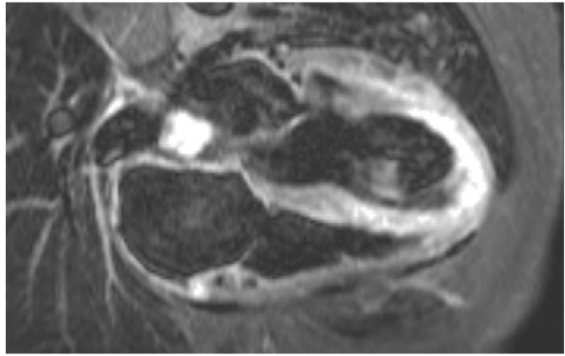


Biatrial view showing left atrial mass attached to the atrial septum.

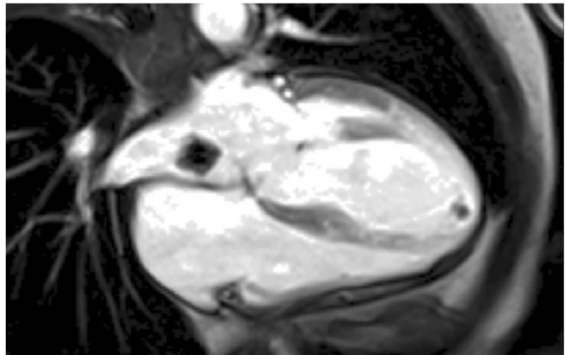
T1-weighted Spin Echo



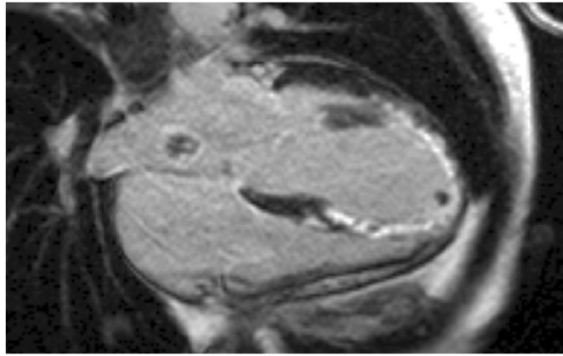
T2-weighted STIR



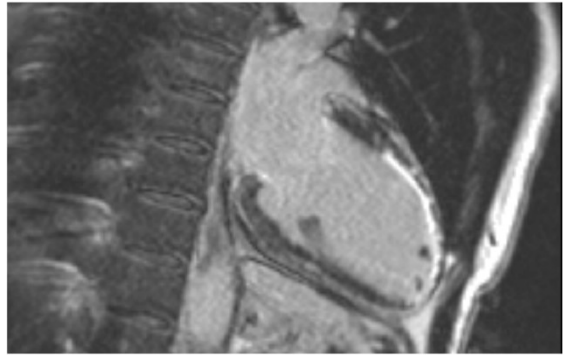
Early Gadolinium Enhancement



Late Gadolinium Enhancement



Late Gadolinium Enhancement



Question 3

What are these masses?

1. Left atrial thrombus, left ventricular thrombi
2. Left atrial tumour, left ventricular thrombi
3. Left atrial thrombus, left ventricular tumours
4. Left atrial tumour, left ventricular tumours
5. Left atrial and ventricular vegetations

Our Diagnosis

Left atrial myxoma, left ventricular apical thrombi.

Patient was to be treated with aspirin, clopidogrel and rivaroxaban for 3 months, then to repeat cardiac imaging and if thrombi resolved, to consider excision of myxoma.

TABLE 1 Summary of Cardiac Mass CMR Features

	T1w	Phc	T2w	STIR	GRE	Contrast Enhancement	"Big Spot"
Myxoma	iso (heterogeneous)	iso-hyper (heterogeneous)	hyper (heterogeneous)	No change	Hyper	Heterogeneous	Left atrium, middle lobe
Papillary fibroelastoma	iso	iso	iso	iso	Hyper	Usually not assessable	Middle lobe, perfunctored turbulent flow
Fibroma	iso	Hyper	Hyper	Hyper	iso-hyper	Early, mid, T2 min. Heterogeneous intense late enhancement	
Hamangioma	iso	iso-hyper	hyper	hyper	hyper	Heterogeneous, intense and prolonged	Angioma like contrast enhancement
Paraganglioma	iso-hyper	Hyper	Hyper	Hyper	Hyper	Strong	High T2 on CM images
Angiosarcoma	iso (heterogeneous)	Hyper	Hyper (heterogeneous)	Hyper	iso (heterogeneous)	Strong	"Cauliflower" aspect on Stack-Road images, and enhancement with "rind" aspect
Rhabdomyosarcoma	iso	iso-hyper	iso-hyper	Hyper	iso	Heterogeneous	Infiltrative aspect with heterogeneous and enhancement
Lymphoma	Hyper-iso	iso-slightly hyper	Slightly hyper	Hyper	iso	Mild	enhancement without destruction of anatomic structures, progressive mild enhancement
Thrombus	Acute - subacute: iso-hyper Chronic: Hyper	iso-hyper Hyper	iso-hyper Hyper	No change	iso-hyper	None	Lesion adjacent to hyper-kinetic segments of the heart, usually no enhancement with 10-20 min post-contrast phase of aortic flow at approximately 600 ms
Cancer metastasis	Hyper	Hyper	Hyper	Hyper	Hyper	Peripheral rim	Hyper in all the sequences, no enhancement despite for the peripheral rim, initial anatomic involvement

The table provides signal intensity (SI) features for each type of mass according to the cardiac magnetic resonance (CMR) sequence performed. Of note, the last table column on the right is focused on a brief description of the "big spot" characteristic with specific spots.

Phc = hyperintense to myocardium; Hyper = hyperintense to myocardium; H = isointense to myocardium; Ph = iso-intense to myocardium; No = no signal intensity; STIR = short tau inversion recovery; T1w = T1-weighted; T2w = T2-weighted.

Food For Thought

Could the myocardial infarction be due to embolization from the myxoma to the left anterior descending coronary artery?

Thank you

Sincere gratitude to our sonographers and MR radiographers for acquiring the images used in this presentation.
