Left Atrial Mass: Tumor, Lipoma or Thrombus

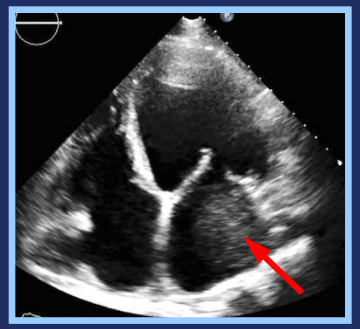
Niti R. Aggarwal,
Division of Cardiac Imaging, **Mayo Clinic, Rochester, MN, USA**

Background

- Atrial myxomas comprise 30-50% of all benign cardiac tumors, typically located in the left atrium, and often mimic thrombus, lipoma or vegetation.
- Although histologically benign, they are associated with increased risk of embolism and sudden cardiac death.

Clinical Case

- 69-year-old man with a history of non-ischemic dilated cardiomyopathy (ejection fraction 31%)
- New onset fatigue, chest tightness , mild dyspnea on exertion and atrial fibrillation
- Transthoracic echocardiography (TTE) reported presence of a new large left atrial mural thrombus measuring 5 X 4 cm in left atrium
- Anticoagulation with Coumadin was initiated for presumed left atrial thrombus.



- 1 month later he presented with progressive symptoms, and a feeling of subglottic fullness
- Repeat TTE demonstrated enlargement of the previously seen echodensity
- Cardiac MRI was ordered for tissue characterization (figure 2). These MRI characteristics were suggestive of cardiac tumor.
- Patient underwent successful removal of the mass, found to be high grade sarcoma on pathology.

Cardiac MRI

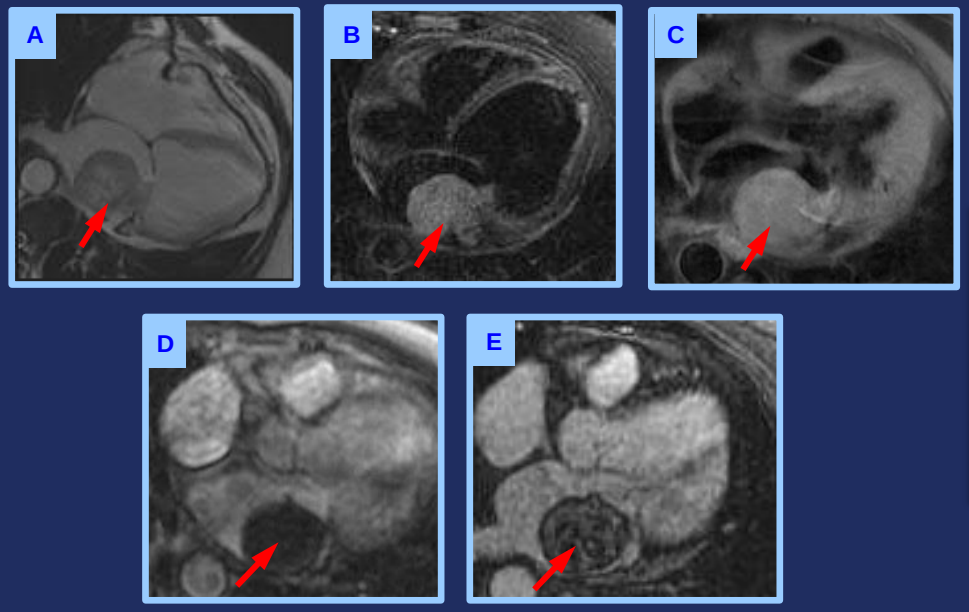


Figure 2: **A)** SSFP cine frame in horizontal long axis plane demonstrating a 5.4 X 5.2 cm mass attached to the posterior wall of the left atrium. It is iso-intense to the myocardium with heterogeneous signal intensity, and obstructs the mitral valve. **B)** It is hyperintense on T2-weighted imaging suggestive of increased water content. **C)** It continues to be hyperintense on fat suppression images, making it unlikely to be a lipoma. **D)** On perfusion images, it does not enhance with contrast. **E)** Heterogenous enhancement of the mass on late gadolinium enhancement makes it inconsistent with thrombus.

Discussion

- Thrombus appears hypointense on T1- and T2-weighted imaging, and doesn't enhance with contrast.
- Lipoma may be in any chamber, bright on T1-weighted imaging, but suppresses with fat pre-saturation techniques.
- Myxoma is a well defined, pedunculated mobile mass in left atrium, doesn't enhance on contrast-MRI or echocardiography, typically with a heterogenous appearance due to decreased signal intensity from calcification or hemorrhage within the mass.
- Sarcoma has an invading character, isointense on T1 & T2-weighted images, centrally hyper intense in T2 due to hemorrhage, and heterogeneous post contrast.

Type	SSFP	T1	T1 + FS	T2	P	MDE
Thrombus	-	-	-	-	-	-
Lipoma	-	++	-	±	-	-
Myxoma	±	±		+	-	H
Malignant		±		±	±	H
Sarcoma		-		±	-	H

Conclusions

- Location, mobility and MRI appearance help with tissue characterization of cardiac masses, but histologic diagnosis remains the gold standard.