

AMSER Case of the Month

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Indeterminate Hepatic Lesion in a Cancer Patient



Nikita Jhavar, MS4
Drexel University College of Medicine



Addison Elston, MD
Matthew Hartman, MD
Allegheny Health Network



Patient Presentation

- 66-year old female with a PMHx of chronic essential hypertension, hypertriglyceridemia, stage 3 chronic kidney disease, and left invasive ductal carcinoma s/p left lumpectomy. At the time of diagnosis, US revealed a spiculated mass measuring 1.6 x 1.6 x 1 cm. A subsequent US-guided biopsy revealed invasive ductal carcinoma, grade II, estrogen (+), progesterone (+), and HER2 (-).
- CT Chest Abdomen and Pelvis was ordered after the breast cancer was detected and demonstrated an indeterminate hypodense hepatic lesion.

Pertinent Labs

- No pertinent labs

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant 1. Suspected liver metastases. Initial imaging test following detection of primary tumor.

Radiologic Procedure	Rating	Comments	RRL
CT abdomen with IV contrast	9		⊕⊕⊕
MRI abdomen without and with IV contrast	8		○
CT abdomen without and with IV contrast	5		⊕⊕⊕⊕
MRI abdomen without IV contrast	5		○
FDG-PET/CT skull base to midhigh	5		⊕⊕⊕⊕
In-111 somatostatin receptor scintigraphy	5		⊕⊕⊕⊕
US abdomen	4		○
CT abdomen without IV contrast	4		⊕⊕⊕

Note: Rating scale: 1, 2, 3 = usually not appropriate; 4, 5, 6 = may be appropriate; 7, 8, 9 = usually appropriate. FDG-PET = positron emission tomography using fluorine-18-2-fluoro-2-deoxy-D-glucose imaging; IV = intravenous; RRL = relative radiation level; US = ultrasound.

This imaging modality was ordered by the physician

Findings (unlabeled)

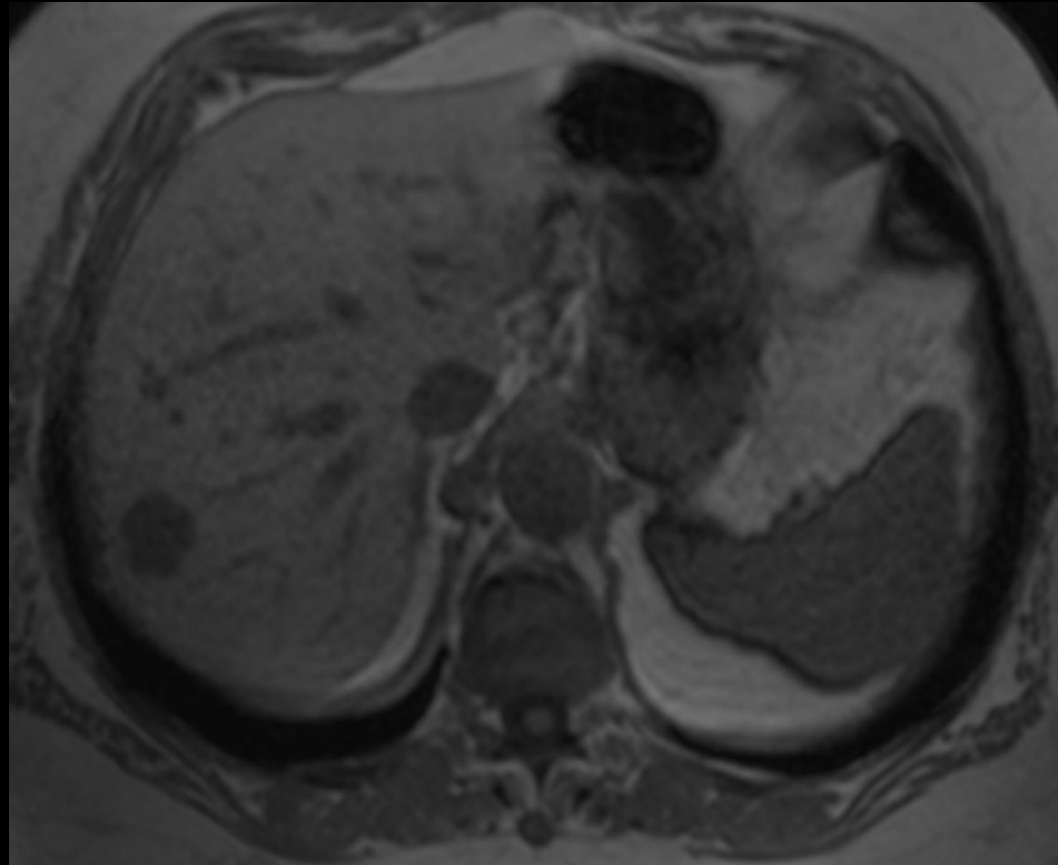


Findings (labeled)

CT portal venous phase



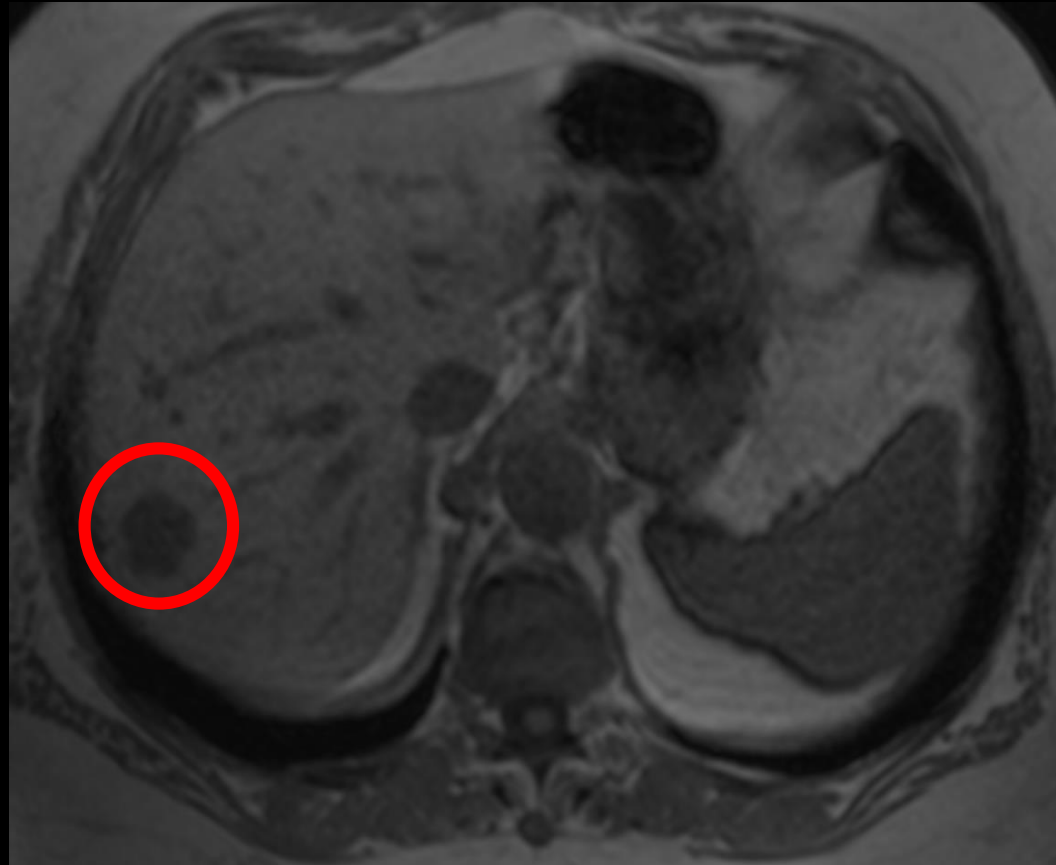
Findings (unlabeled)



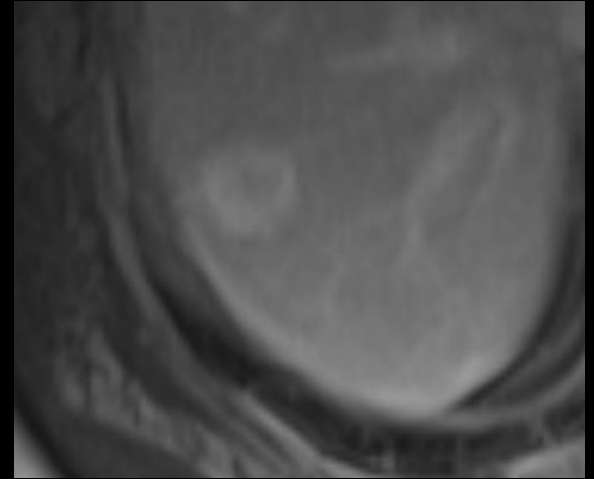
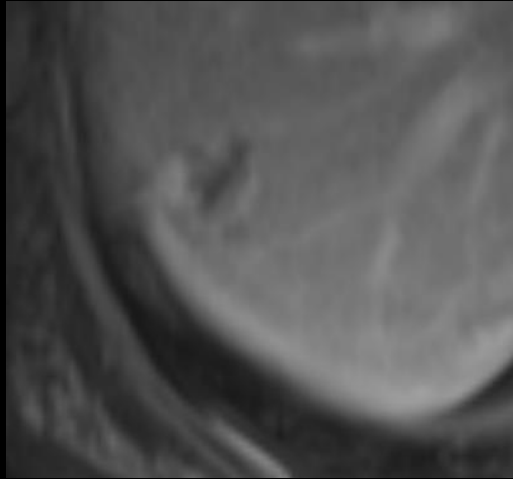
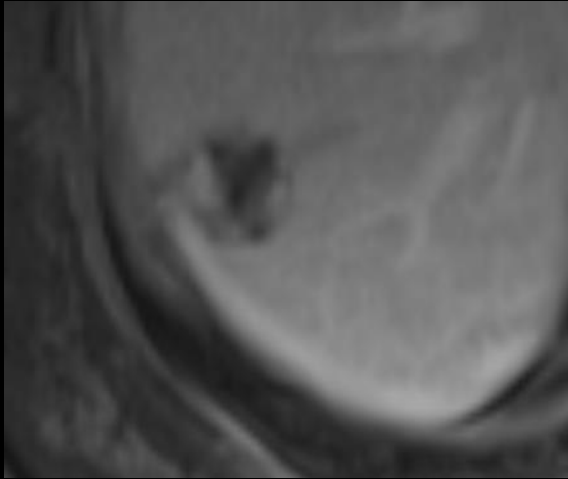
Findings (labeled)

**T1-weighted MRI
(pre-contrast)**

**T1 hypointense lesion
in the right hepatic
lobe**



Findings (unlabeled)



Findings (labeled)

The earliest enhancement of the lesion is an incomplete peripheral rim often described as peripheral nodular enhancement.



**T1-Weighted MRI
Post 60 seconds**



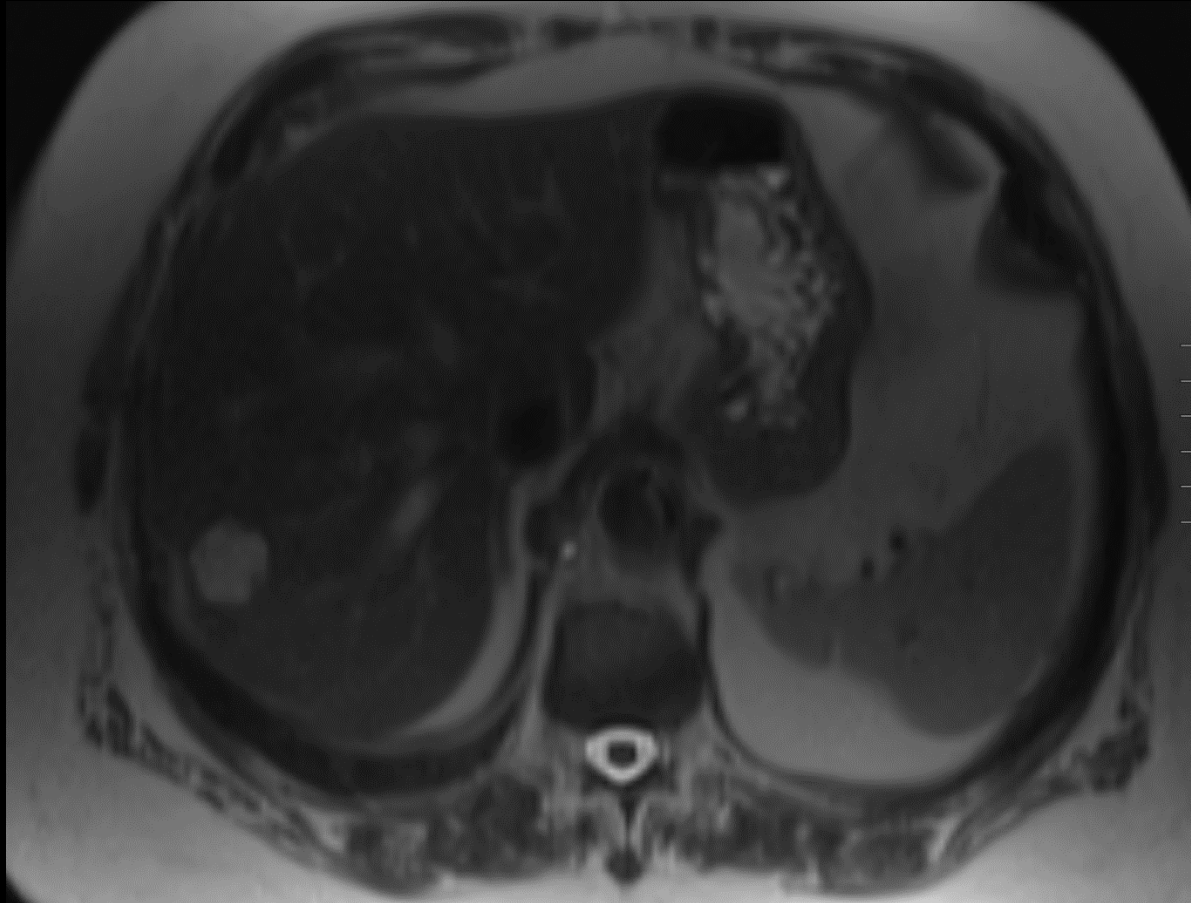
**T1-Weighted MRI
Post 2 minutes**



**T1-Weighted MRI
Post 5 minutes**

The lesion in the right hepatic lobe demonstrates progressive nodular enhancement which fills in on delayed images

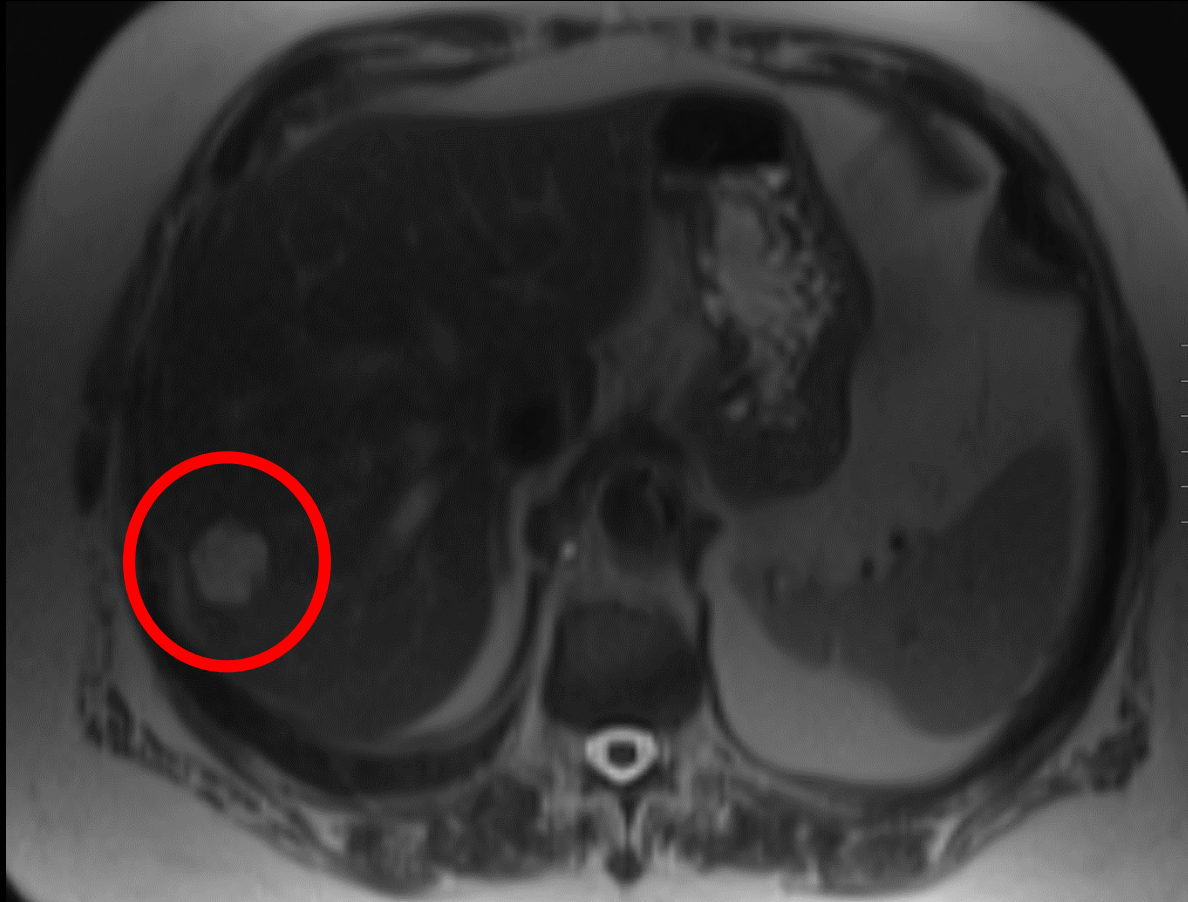
Findings (unlabeled)



Findings (labeled)

T2-weighted MRI

T2 hyperintense lesion in the right hepatic lobe. Note that the lesion is T2 hyperintense to the spleen – a characteristic common to hemangiomas and cysts, both benign entities.



Final Dx:

Benign 2.4 cm right hepatic lobe hemangioma.
No evidence of metastatic disease.

Hepatic Hemangioma

- Hepatic hemangiomas constitute the most common benign liver pathology (0.4-20% of general population)
- Can be diagnosed at any age, but majority are diagnosed in individuals of ages 30-50 years—often incidentally
- 3x more commonly seen in females

- Thought to be non-neoplastic and congenital in origin
- Usually of the cavernous subtype (like our case which will be further discussed)
- Less common subtypes (which will not be discussed) include the giant hepatic hemangioma, flash filling hepatic hemangioma and sclerosing hepatic hemangioma

Radiologic Appearance of Typical Hepatic Hemangioma

- Non-contrast US:
 - homogenous, hyperechoic, well-delineated margins
 - Lesion is <3cm in diameter
 - No history of cirrhosis or malignancies of other organs
- CT
 - Non-contrast: usually hypoattenuating relative to the rest of the liver parenchyma
 - Arterial phase: classically demonstrate discontinuous, nodular, peripheral enhancement
 - Portal venous phase: progressive peripheral enhancement
 - Delayed phase: further irregular fill-in
- MRI
 - T1 hypointense to liver parenchyma
 - T2 hypertintense to liver parenchyma and spleen but not as T2 bright as CSF
 - T1 Contrast with gadolinium: shows progressive peripheral nodular enhancement similar to CT pattern

Case Discussion

A definitive radiologic diagnosis precludes the need for tissue sampling

References:

- ACR Appropriateness Criteria Suspected Liver Metastases. (2017) *Journal of the American College of Radiology*, Vol: 14, Number: 55. Pages:S314-S325.
- *UpToDate*. (n.d.). *Www.Uptodate.com*. Retrieved February 23, 2021 from https://www.uptodate.com/contents/hepatic-hemangioma?search=hepatic%20hemangioma&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1
- Klotz T, Montorial P, Da Ines D, Petitcolin V, Joubert-Zakeyh J, Garcier J. (2013). Hepatic hemangioma: common and uncommon imaging features. *Diagnostic and Interventional Imaging*, 94:849-859.
- Balaban BN, Savulescu F, Campeanu I, Patrascu T. Hepatic hemangioma review. (2015). *Journal of Medicine and Life*, 8:4-11.