

AMSER Case of the Month: September 2019

Acute-onset abdominal pain

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Patient Presentation

HPI: Ms. E presented to OSH in April 2019 with complaint of acute onset mid-abdominal pain described as aching. She reported no episodes of vomiting, changes in stool frequency or quality, or recent weight loss.

PMH: Anemia, ovarian cyst rupture, no history of liver disease or jaundice

Surg Hx: Hysterectomy

Med: Ibuprofen 400, Keflex 500 BID for recent UTI, no OCP use

Family Hx: No family history of liver disease.

Social Hx: Never a smoker, denies alcohol or illicit drug use

PE:

- Vital signs: normal
- General: no acute distress; well-nourished and well-appearing
- Neuro: no asterixis, CN 2-12 intact
- Cardiovascular: normal rate & rhythm, no murmur/rub/gallop, normal S1/S2, no lower extremity edema
- Respiratory: lungs clear,
- GI: non-tender, non-distended, normal bowel sounds, no palpable masses

Pertinent Labs and Imaging Studies

Labs:

Liver enzymes, bilirubin, albumin, platelet count, and INR were all within normal limits.

A hepatitis panel was negative.

Imaging:

A single-phase intravenous contrast enhanced CT abdomen revealed a 1.8 cm enhancing lesion in the right hepatic lobe with indeterminate imaging features.

What Imaging Should We Order to
Characterize this Liver Mass?

Select the applicable ACR Appropriateness Criteria

Clinical Condition: Liver Lesion—Initial Characterization
Variant 2: Indeterminate >1 cm lesion on initial imaging with CT (without or with contrast). Normal liver. (No suspicion or evidence of extrahepatic malignancy or underlying liver disease.)

Radiologic Procedure	Rating	Comments	RRL*
MRI abdomen without and with IV contrast	8	Consider this procedure if CT characterization is incomplete.	0
MRI abdomen without IV contrast	7	Consider this procedure if MRI with gadolinium is contraindicated. A noncontrast-enhanced MRI is superior to a noncontrast-enhanced CT.	0
US abdomen	5	Consider this procedure to diagnose a cyst versus solid lesion and to guide a percutaneous biopsy.	0
Percutaneous image-guided biopsy liver	5	Consider this procedure if imaging findings are atypical, inconclusive, or suspicious for malignancy after doing contrast-enhanced CT or MRI.	Varies
Tc-99m sulfur colloid scan liver	3	Consider this procedure to evaluate for FNH if GFR precludes CT or MRI contrast agents.	☼☼☼
Tc-99m RBC scan liver	3	Consider this procedure if a hemangioma is suspected and if GFR precludes CT or MRI contrast agents.	☼☼☼
In-111 somatostatin receptor scintigraphy	3	This procedure is not appropriate unless there is a known or suspected neuroendocrine tumor.	☼☼☼☼
FDG-PET/CT whole body	3	This procedure is not appropriate unless there is a known malignancy.	☼☼☼☼

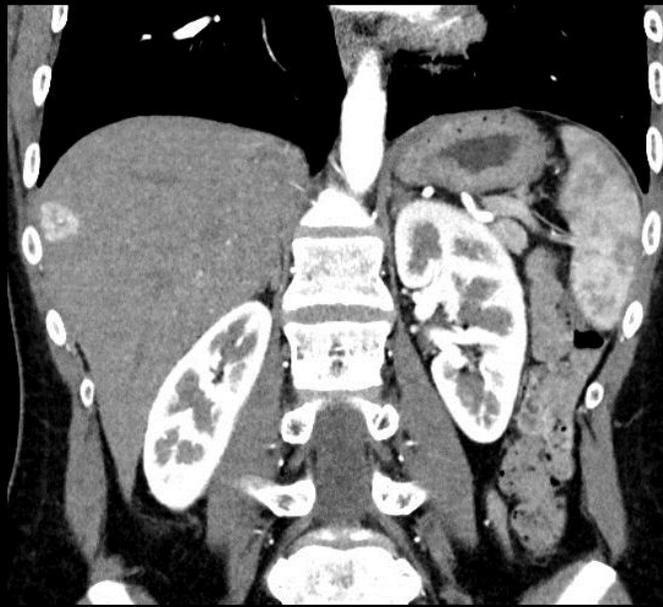
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate

*Relative Radiation Level

Although MRI with and without intravenous contrast is the most appropriate imaging study, a multiphasic CT was requested by the treating physician



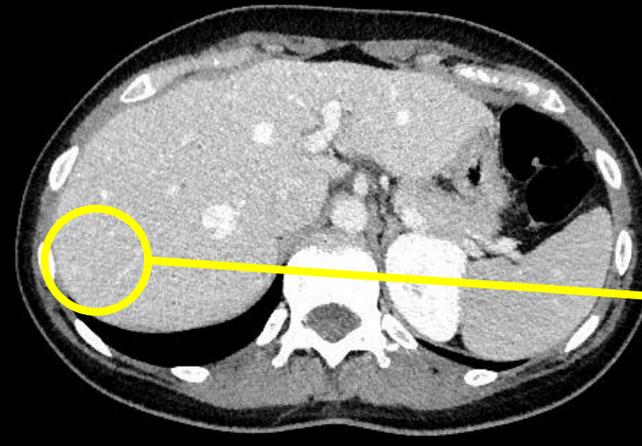
Findings (unlabeled)



Findings (labeled)

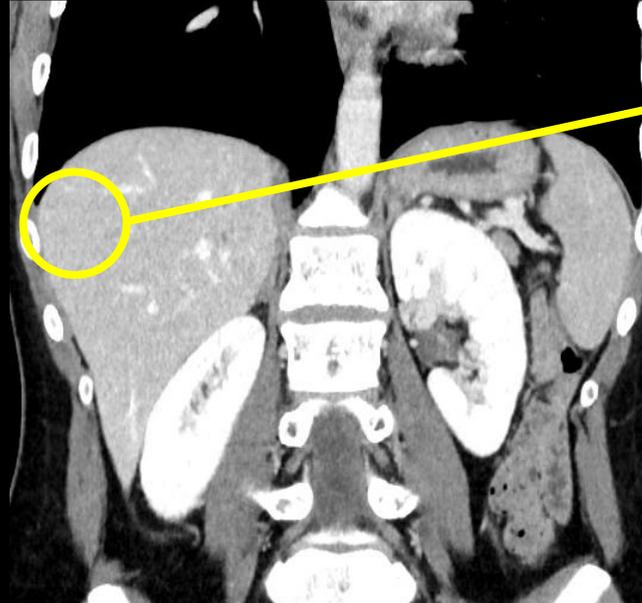
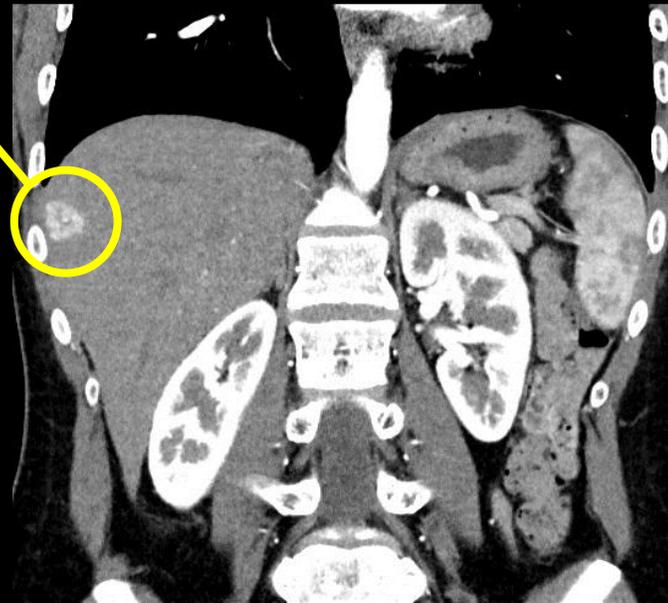
Arterial Phase

Portal Venous Phase



Arterial phase images show arterial phase hyperenhancement of the mass

The mass is isoentense to background liver on portal venous phase images



Final Dx:

Focal Nodular Hyperplasia (FNH)

Case Discussion

- The liver mass detected in this case was an incidental finding (unrelated to her symptoms). Her mid-abdominal pain resolved weeks before she underwent a follow-up CT scan to characterize the mass.
- Incidental liver lesions are frequently detected as incidental findings and need to be characterized. Evaluation depends on lesion size, imaging features, and patient risk factors. The ACR appropriateness criteria describes recommendations for lesions > 1 cm.
- Provided there are no contraindications, **MRI with and without intravenous contrast is the study of choice** for evaluating liver lesions not characterized on initial imaging.

Case Discussion

Focal Nodular Hyperplasia (FNH)

Clinical:

- Benign: represents a hyperplastic response to preexisting arterial malformation
- Women of reproductive age (1:8 male: female)
- No risk for bleeding or malignant transformation (nonsurgical)

Imaging:

- “Stealth” lesion: may be difficult to identify on non-contrast CT and MRI
- Shows intense arterial enhancement and becomes iso-attenuating/iso-intense on portal venous phase CT and MRI

References

- American College of Radiology. ACR Appropriateness Criteria for Liver Lesion– Initial Characterization. Available at <https://acsearch.acr.org/docs/69472/Narrative/> Accessed July 23, 2019.
- UptoDate. Solid liver lesions: Differential diagnosis and evaluation. Accessed July 23, 2019.
- UptoDate. Focal Nodular Hyperplasia. Accessed July 23, 2019.
- Hussain SM et al. Focal nodular hyperplasia: findings at state-of-the-art MR imaging, US, CT, and pathologic analysis. *Radiographics* 2004;24:3-17, discussion 18-9.