



Case 3

Case 3

61 y/o, male

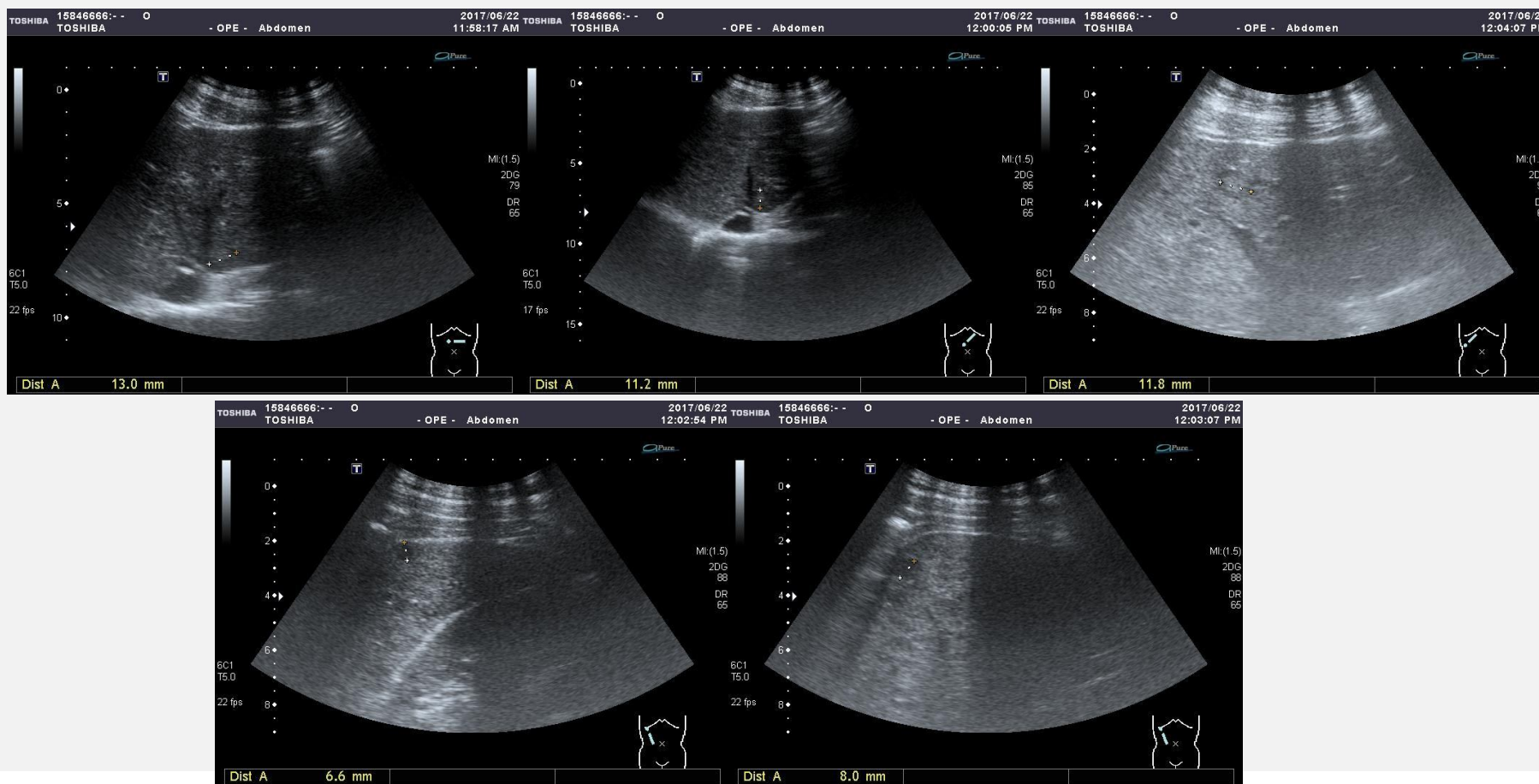
- PHx: Chronic hepatitis B
- CC: Bloody stool for 3~4 months with abnormal US findings
- Lab: GOT: 43 U/L, GPT: 44 U/L.

Imaging

- 106-06-21 Abdominal CT
- 106-06-22 Upper abdomen MRI
- 106-06-22 Abdominal US
- 106-10-14 Abdominal CT
- 106-11-08 Upper abdomen MRI
- 106-11-30 Abdominal US

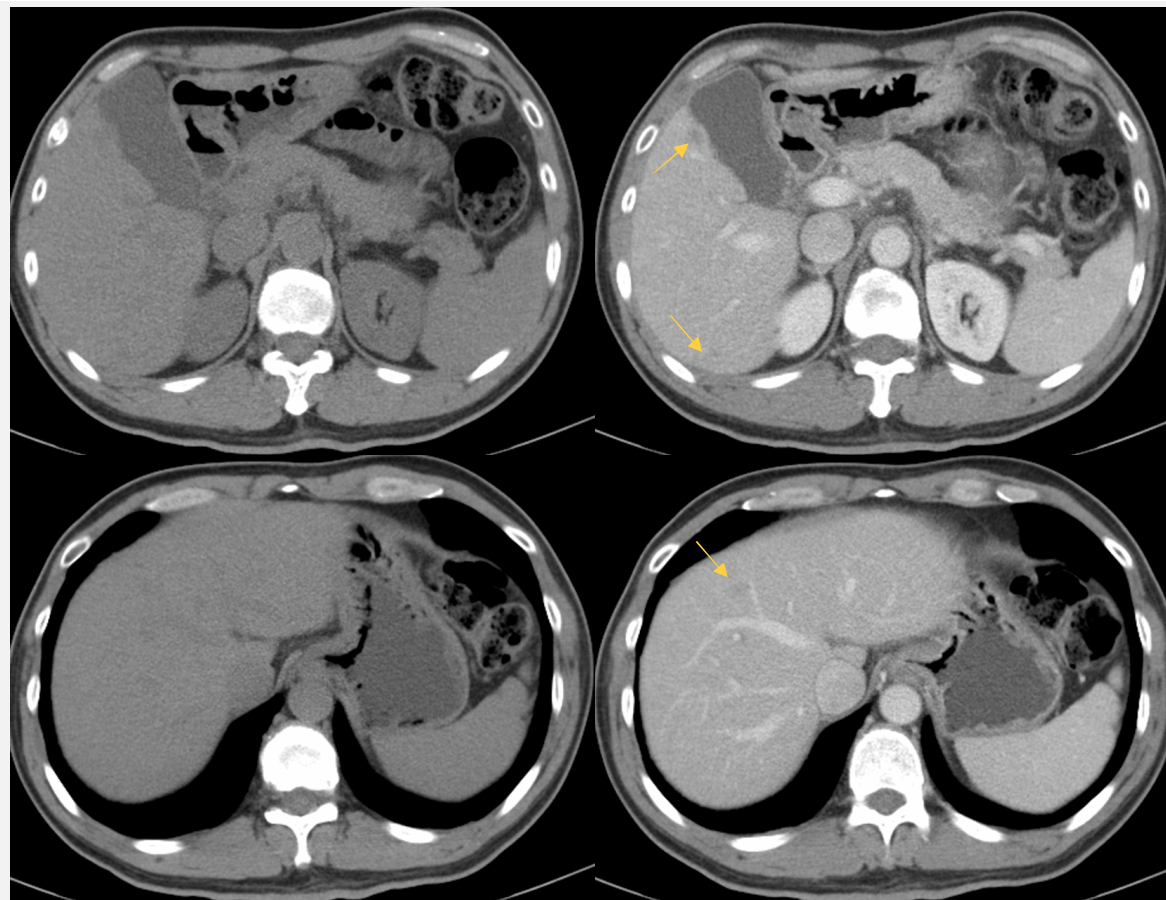
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Imaging 106-06-22



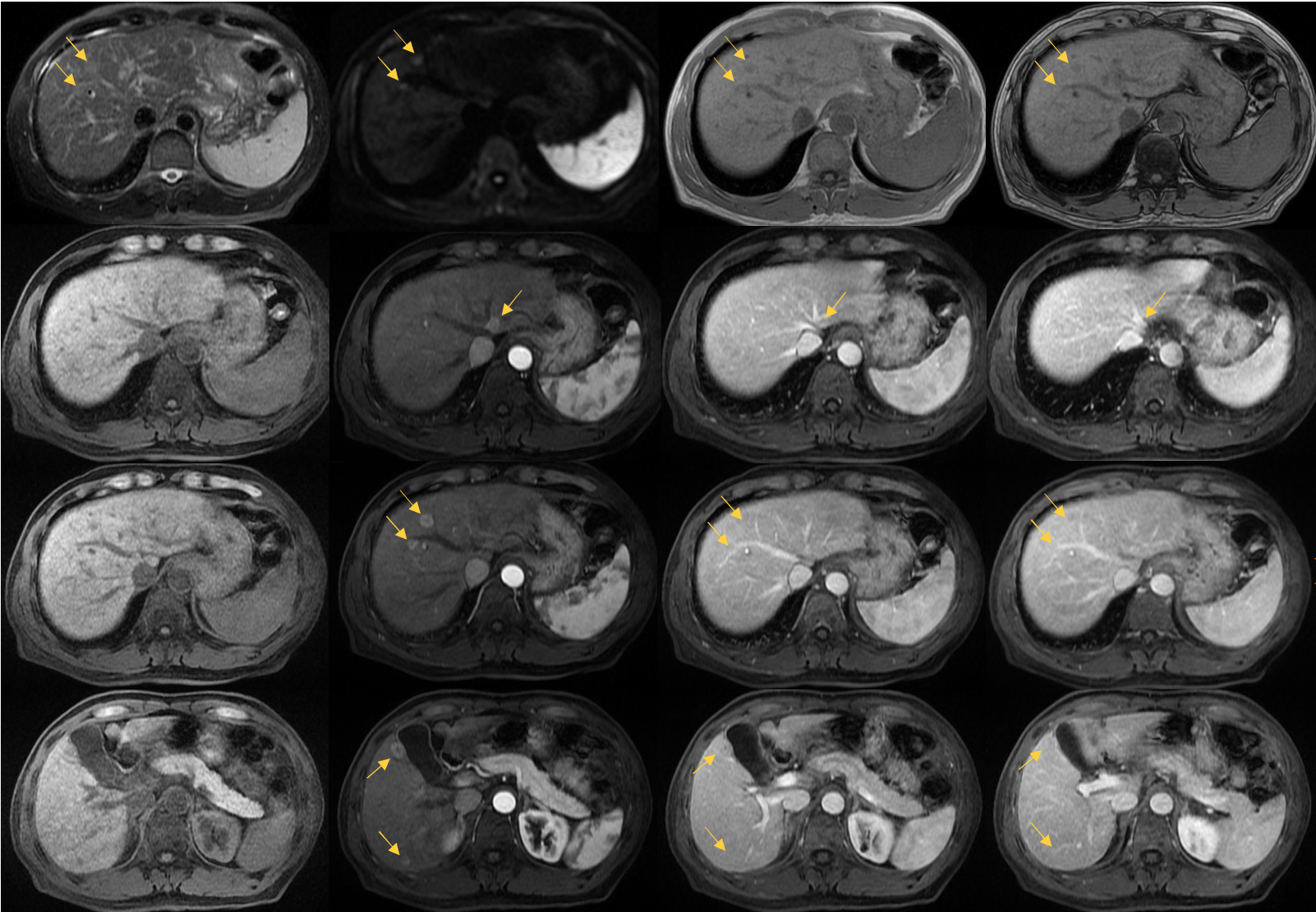
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Imaging 106-06-21



Case 3

Imaging 106-06-22



Case 3

Differential diagnosis

- Hepatocellular carcinoma
- Hypervascular hepatic metastases
- Others
 - Fungal hepatic abscess
 - Amebic hepatic abscess
 - Pyogenic hepatic abscess

Case 3

Target Lesions in Liver

- **Hepatic Metastases**

- **Solid central tumor with hypoechoic halo**
 - Halo most likely related to compressed hepatic tissue along with zone of cancer cell proliferation
- Usually from aggressive primary tumors; classic example: Bronchogenic carcinoma

- **Hepatocellular Carcinoma**

- **Background of cirrhosis**, portal hypertension, ascites
- Any mass in cirrhotic liver is more likely hepatocellular carcinoma than metastasis

- **Hepatic Lymphoma**

- Vast majority are uniformly hypoechoic
- Splenomegaly or splenic lesions, lymphadenopathy, thickened bowel wall provide clues toward diagnosis

- **Fungal Hepatic Abscess**

- Often multiple lesions
- Typically in immunocompromised patient

- **Amebic Hepatic Abscess**

- Iso- to mildly hyperechoic center with hypoechoic halo
- Abuts liver capsule

- **Pyogenic Hepatic Abscess**

- Central hyperechoic inflammatory nodule surrounded by hypoechoic halo of fibrosis
- Cluster sign
- Lobulated or irregular contour

Case 3

LI-RADS v2018



Apply in patients at high risk for HCC, namely those with:

- Cirrhosis **OR**
 - Chronic hepatitis B viral infection **OR**
 - Current or prior HCC
- Including adult liver transplant candidates and recipients posttransplant

CT/MRI Diagnostic Table

Arterial phase hyperenhancement (APHE)		No APHE		Nonrim APHE		
Observation size (mm)		< 20	≥ 20	< 10	10-19	≥ 20
Count additional major features: • Enhancing "capsule" • "Nonperipheral washout" • Threshold growth	None	LR-3	LR-3	LR-3	LR-3	LR-4
	One	LR-3	LR-4	LR-4	LR-4	LR-5
	≥ Two	LR-4	LR-4	LR-4	LR-5	LR-5

Ancillary features favoring malignancy

Favoring malignancy in general, not HCC in particular

- US visibility as discrete nodule
- Subthreshold growth
- Restricted diffusion
- Mild-moderate T2 hyperintensity
- Corona enhancement
- Fat sparing in solid mass
- Iron sparing in solid mass
- Transitional phase hypointensity
- Hepatobiliary phase hypointensity

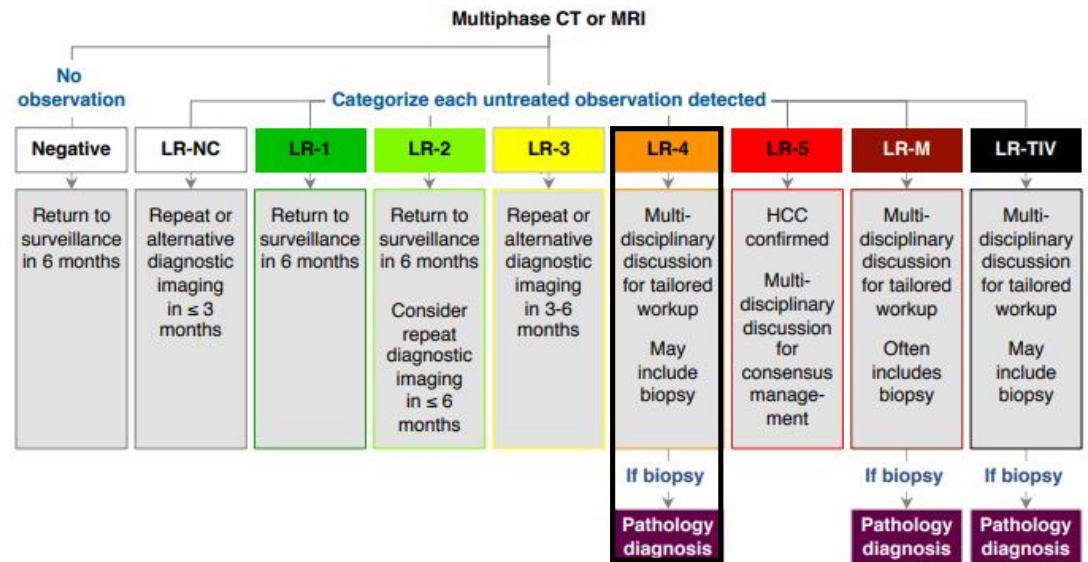
Favoring HCC in particular

- Nonenhancing "capsule"
- Nodule-in-nodule
- Mosaic architecture
- Blood products in mass
- Fat in mass, more than adjacent liver

Ancillary features favoring benignity

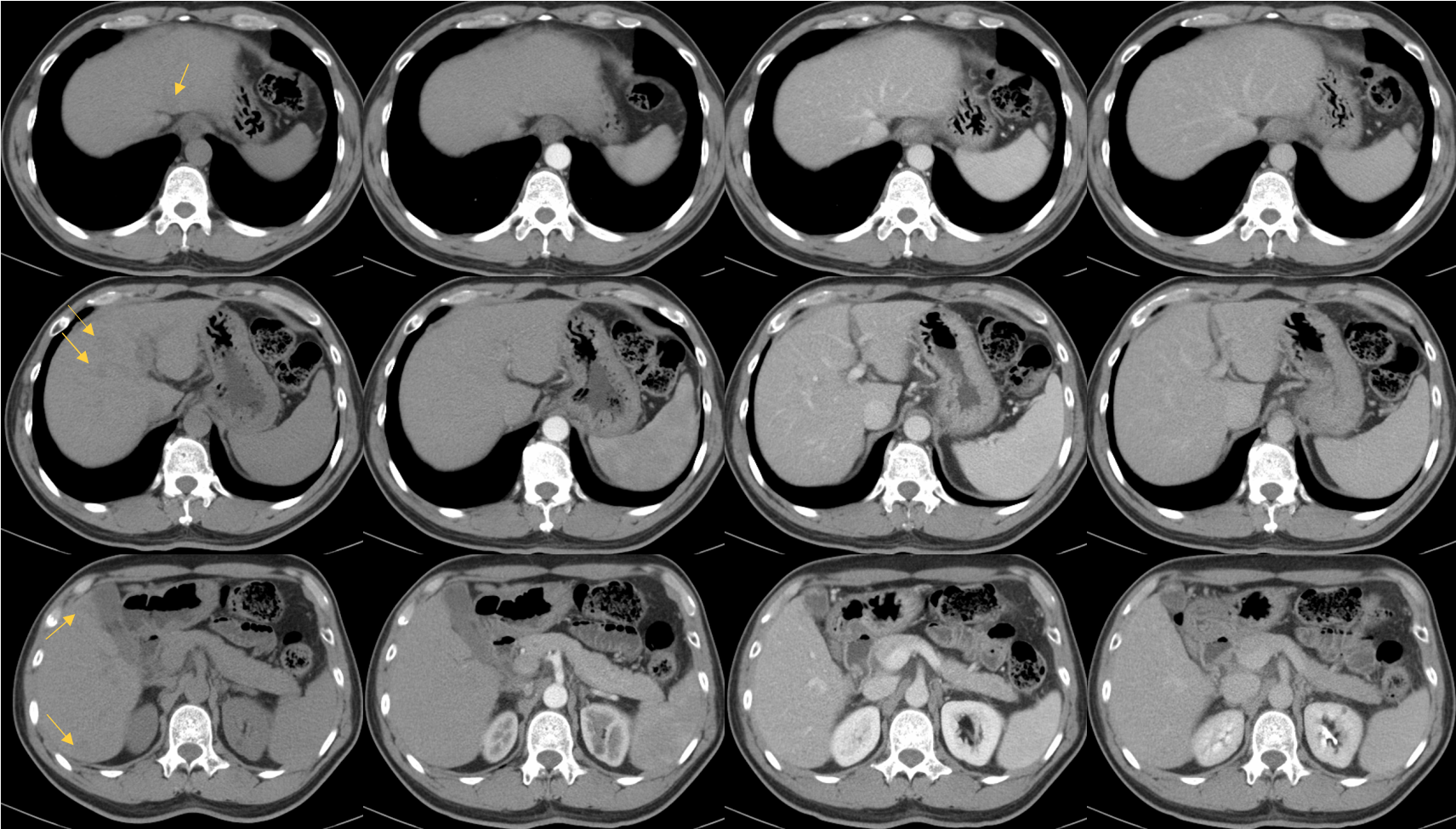
- Size stability > 2 yrs
- Size reduction
- Parallels blood pool
- Undistorted vessels
- Iron in mass, more than liver
- Marked T2 hyperintensity
- Hepatobiliary phase isointensity

Untreated observations



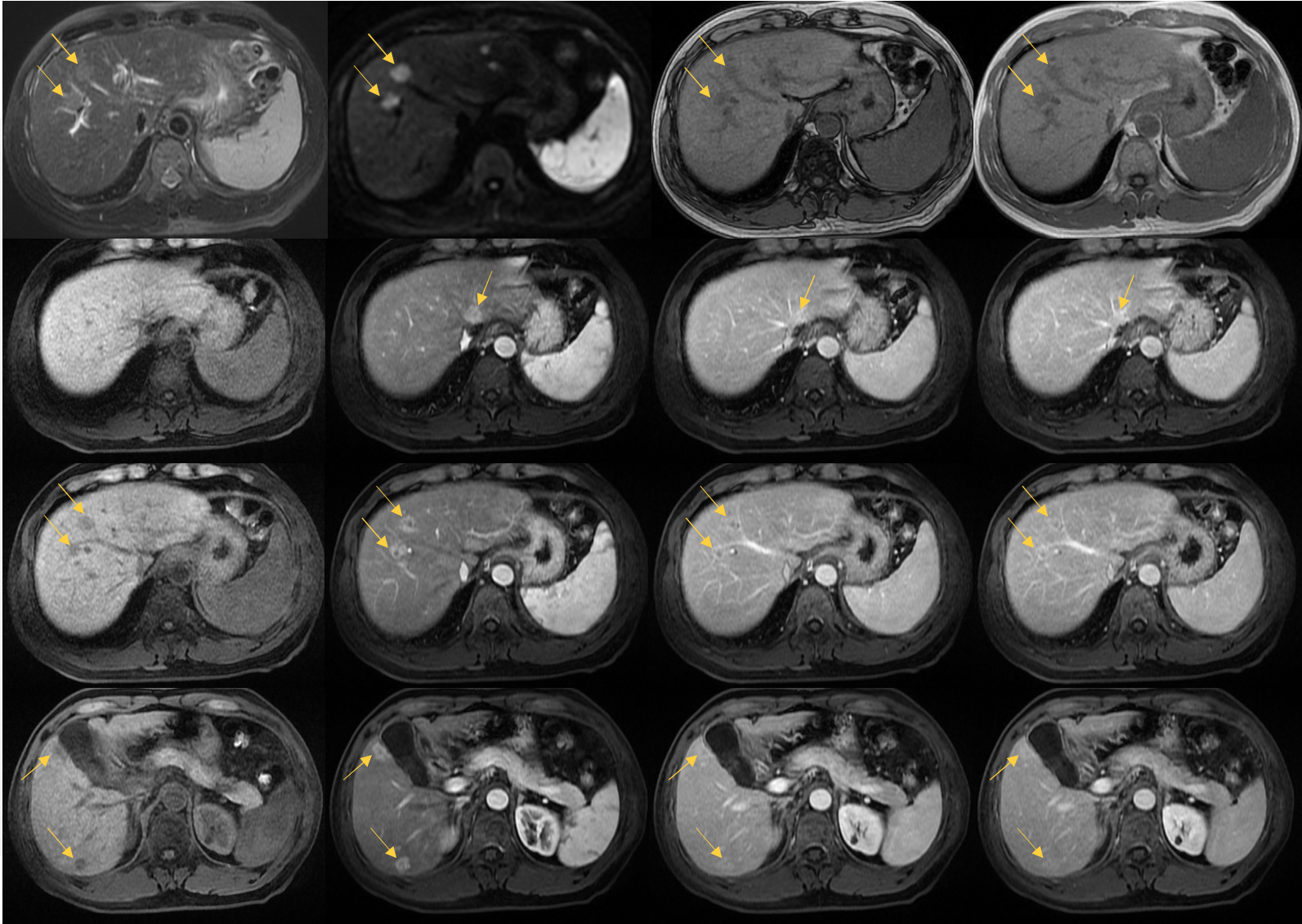
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Imaging 106-10-14



Case 3

Imaging 106-11-08



Case 3

LI-RADS v2018

LR-M Criteria

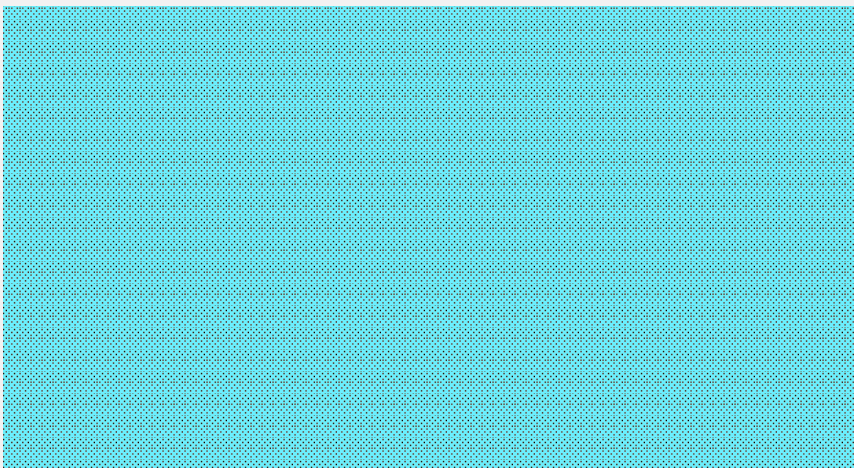
Targetoid mass (see below for definition and imaging appearances)

OR

Nontargetoid mass with one or more of the following:

- Infiltrative appearance. See [page 28](#).
- Marked diffusion restriction. See manual (pending).
- Necrosis or severe ischemia. See manual (pending).
- Other feature that in radiologist's judgment suggests non-HCC malignancy (specify in report). See manual (pending).

No tumor in vein
Not meeting LR-5 criteria



Targetoid, definition

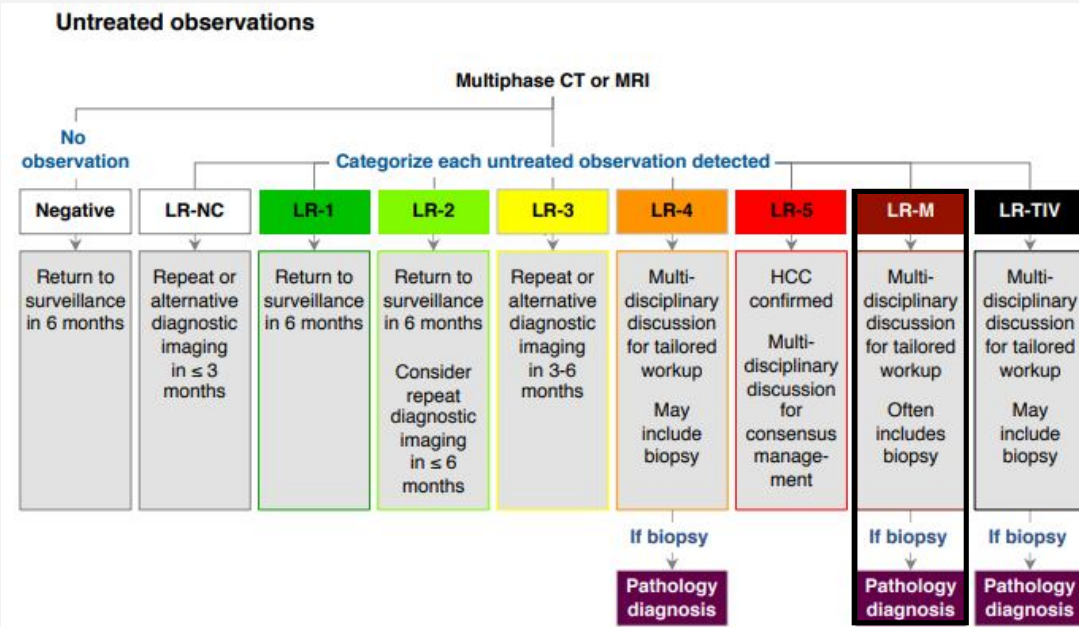
Target-like imaging morphology. Concentric arrangement of internal components. Likely reflects peripheral hypercellularity and central stromal fibrosis or ischemia.

Characteristic of

- Intrahepatic cholangiocarcinoma (iCCA)
- Combined HCC-cholangiocarcinoma (combined HCC-CCA or cHCC-CCA)
- Other non-HCC malignancies

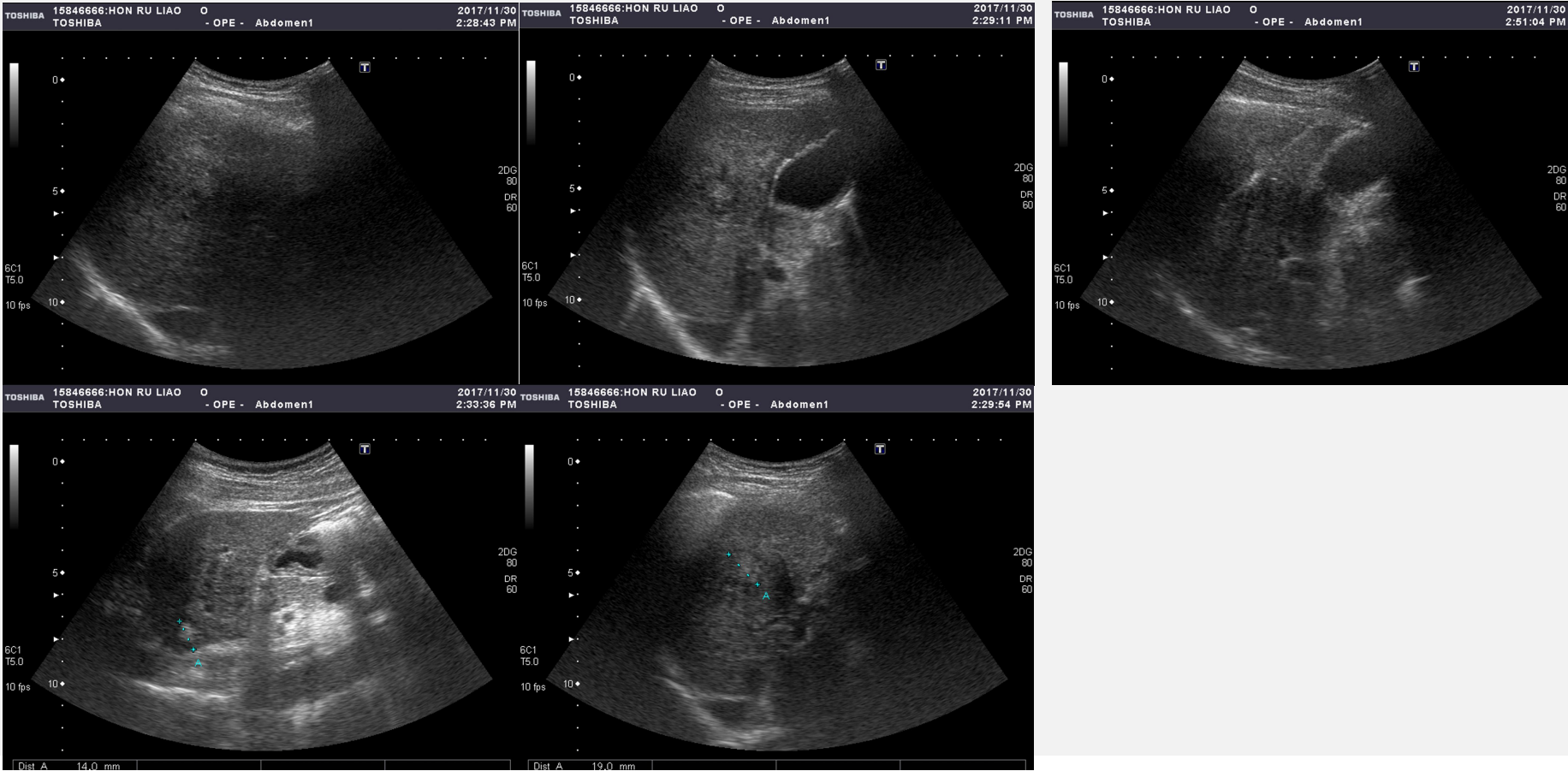
Can be seen in HCC with atypical appearance.

Therefore, targetoid appearance suggests non-HCC malignancy but does not exclude HCC.



Case 3

Imaging 106-11-30



Case 3

Pathology

- Diagnosis : Liver, echo guide biopsy, adenocarcinoma, metastatic
- The specimen submitted consists of three tissue fragments measuring up to 1.0 x 0.1 x 0.1 cm in size, fixed in formalin.
- Grossly, they are gray and soft.
- Microscopically, it shows a picture of adenocarcinoma composed of tumor cells arranged in glandular pattern in the liver parenchyma. Immunohistochemically, the tumor cells are positive for CK20, CDX2 and focally positive for CK7. Metastatic adenocarcinoma of colon is considered first.
- The mutation of codon 12 or 13 of KRAS exon 2 is not detectable.
- The epidermal growth factor receptor expression is positive.
- The mutation of codon 61, 117, 146 of KRAS gene or NRAS 12-13, 59-61, 117, 146 is not detectable.