I
maging Challenges: CT vs MR and Use of Hepatocyte Specific Contrast Agents
Alexander J. Towbin, MD

1. Which of the following describes the population that gadoxetate disodium is approved for use by the United States Food and Drug Administration?

   A. Only adults 18 years and older with known or suspected focal liver disease
   B. Only adults 25 years and older with known or suspected focal liver disease
   C. Only patients 10 years and older with known or suspected focal liver disease
   D. In patients with known or suspected focal liver disease

Correct Answer: D. In patients with known or suspected focal liver disease

Reference:
   1. gadoxetate disodium package insert

2. In children, gadoxetate disodium has been shown to:

   A. Improve lesion border delineation
   B. Increase number of liver lesions identified
   C. Increase diagnostic confidence of liver tumors
   D. All of the above

Correct Answer: D. All of the above

References:


3. Which of the following is a benefit of CT over MRI in a young child with a known liver lesion

   A. Improved contrast resolution
   B. Ability to obtain imaging in the arterial and portal venous phase
   C. Ability to image the lungs and abdomen in a single setting
   D. Ability to obtain multiplanar reformats

Correct Answer: C. Ability to image the lungs and abdomen in a single setting

Reference:
4. POSTTEXT Staging is performed:

A. At the time of diagnosis
B. After surgical resection of the primary tumor
C. After neoadjuvant therapy and just prior to surgical resection
D. One year after diagnosis

**Correct Answer:** C. After neoadjuvant therapy and just prior to surgical resection

**Rationale:** Option A is incorrect. PRETEXT, not POSTTEXT, staging is performed at the time of diagnosis and prior to neoadjuvant therapy. Option B is incorrect. The PRETEXT/POSTTEXT staging system was created to provide a method of staging prior to surgery and is based on imaging rather than tumor resectability. Option D is not correct. No PRETEXT/POSTTEXT staging is performed after the primary tumor has been resected.

**References:**

**Rationale:** Option A is not correct because PRETEXT I requires 3 contiguous disease free segments. Option B is not correct because PRETEXT II requires 2 contiguous disease free segments. Option C is not correct because PRETEXT III requires 1 disease free segment.

**References:**


6. Which one of the following is an Annotation Factor in PRETEXT staging:
   
   A. Tumor size  
   B. Patient age  
   C. Distant metastasis  
   D. Serum AFP level

**Correct Answer:** C. Distant metastasis

**Rationale:** Option A is not correct. Tumor size is not an annotation factor for PRETEXT staging. Option B is not correct. Although patient age may be important in predicting outcome it is not a PRETEXT Annotation Factor. Option D is not correct. Serum AFP levels are valuable in predicting the biological behavior of hepatoblastoma but are not a PRETEXT Annotation Factor.

**References:**


**Rare Pediatric Liver Tumors: Embryonal Sarcoma, HCC and Others**

*Govind Chavhan, MD, DNB, DABR*

7. What is the likely diagnosis of the following liver lesion?
A. Fibrolamellar HCC  
B. FNH  
C. Regenerative nodule  
D. Hemangioma

**Correct Answer:** A. Fibrolamellar HCC

**Rationale:** This lesion has T2 dark central scar, shows washout in equilibrium phase and dark on hepatobiliary phase. FNH has T2 hyperintense central scar. Regenerative nodule is T2 hypointense and behaves similar to parenchyma on all phases. Hemangioma has typical centripetal enhancement and retains contrast on delayed phases.

**References:**


8. What is the typical age group for presentation of undifferentiated embryonal sarcoma?
   
   A. Neonatal  
   B. 1-2 years  
   C. 6-10 years  
   D. Teen age

**Correct Answer:** C. 6-10 years

**References:**

Contrast Enhanced Ultrasound of Liver Masses in Children

Judy H. Squires, MD

9. What appearance is concerning for metastasis on the washout phase of contrast-enhanced ultrasound?

A. Marked early washout  
B. Delayed, subtle washout  
C. Iso-enhancement  
D. Hyper-enhancement

Correct Answer: A. Marked early washout

Rationale: Metastases at CEUS can have a variable appearance in the arterial phase but eventually fill-in completely with microbubble contrast. Then, similar to other liver malignancies, typically have marked, early washout, often by the end of the portal venous phase - much faster and more complete than other liver tumors.

References:

10. What is the typical early arterial enhancement appearance of focal nodular hyperplasia?

A. Hypo-enhancement  
B. Iso-enhancement  
C. Heterogenous early arterial enhancement  
D. Centrifugal early arterial enhancement

Correct Answer: D. Centrifugal early arterial enhancement

Rationale: Focal nodular hyperplasia is common in cancer survivors and can be diagnosed at CEUS if early arterial stellate or “spoke wheel” hyper-enhancement is seen, followed by rapid centrifugal fill-in of contrast, and sustained enhancement through portal venous and delayed phase of imaging.

References: