Neonatal Cholestasis
Sara M. O’Hara, MD
Janet R. Reid, MD, FRPC

1. Choose the most appropriate order of imaging for a 6 week-old with direct hyperbilirubinemia:

   A. US > MRI > cholangiogram > HIDA
   B. MRI > US > cholangiogram > HIDA
   C. HIDA > US > MRI > cholangiogram
   D. US > cholangiogram > HIDA > MRI

   **Correct Answer: A**

   **Rationale:** In a 6 week-old with jaundice and elevated direct bilirubin, the first thing that must be excluded is biliary atresia as an earlier diagnosis of this condition confers the best prognosis. MRI/MRCP is a second line study that can be used to better evaluate the biliary anatomy. Once biliary atresia is suspected, intra-operative cholangiogram is indicated for confirmation. There is little role for HIDA scan in this scenario. Note that not all imaging modalities may be needed to make a diagnosis.

   **Reference:**

2. Ultrasound in a 6 month-old with biliary atresia status post Kasai portoenterostomy. What finding is demonstrated that has a known association with biliary atresia?

   A. Byler disease
   B. Hemangiomas
   C. Polysplenia
   D. Lymphadenopathy

   **Correct Answer: C**

   **Rationale:** There are many associations with biliary atresia, including heterotaxy syndrome/polysplenia, intestinal malrotation, and preduodenal portal vein.

   **Reference:**
3. Which of the following is part of the criteria for acute recurrent pancreatitis (ARP)?

A. Pancreatic parenchymal changes apparent by imaging or endoscopy
B. Exocrine pancreatic insufficiency
C. Endocrine Pancreatic insufficiency
D. Resolution of symptoms and normalization of enzymes between episodes.

Correct Answer: D

Rationale: Diagnostic criteria for acute recurrent pancreatitis include the following: > 2 episodes of acute pancreatitis along with resolution of the pain ( > 1 month between episodes) or normalization of enzyme levels and resolution of pain irrespective of time interval.

References:

4. In this 5 year old with pancreatitis, at 5 weeks what is the collection indicated by the arrow?

A. Acute fluid collection
B. Pseudocyst
C. Walled off necrosis
D. Choledochal cyst

Correct Answer: C

Rationale: Answer A is incorrect. This collection is organized with a well-defined wall. Acute fluid collections are not organized. Answer B is incorrect. There is debris/material in the collection on the first scan reflective of necrotic material. Also, the collection is intra-pancreatic. Once walled off necrosis, always walled off necrosis. Answer D is incorrect. This collection is in the body/tail of the pancreas. Choledochal cysts are abnormalities of the common bile duct, and if they involve the pancreas, they involve the head and uncinate process.

Reference:
5. Which of the following statements is INCORRECT?

A. ERCP can be diagnostic and therapeutic for pancreatic duct injury
B. MRCP can be used to confirm pancreatic duct injury when CT is equivocal
C. Pancreatic duct injury is more likely with deep lacerations >50% thickness on CT
D. Oral contrast significantly increases CT sensitivity for detection of pancreatic duct injury

Correct Answer: D

Rationale: A large, prospective, multicenter study of children with blunt torso trauma involving >12,000 patients demonstrated poor sensitivity of CT for detecting pancreatic injuries. There was no significant difference between CT performed with versus without oral contrast.

References:

6. In this 10-year-old boy, what is the most likely mechanism of pancreatic injury from the choices below?

A. Penetrating laceration to the back
B. Diving into a shallow pool
C. Blunt abdominal injury from football helmet
D. Two-story fall

Correct Answer: C

Rationale: Bicycle accidents account for 5-14% of blunt abdominal trauma in children, and handlebar injuries account for 27% of blunt pancreatic trauma in children. An additional well-described mechanism of pancreatic injury in children is related to blunt abdominal injury from playing American football. Children are at a substantially increased risk of blunt traumatic intra-abdominal injuries because of an incompletely ossified rib cage, underdeveloped chest and abdominal wall musculature, less intra-abdominal fat to cushion blows, and proportionally larger visceral organs relative to total body size compared with an adult. The mechanisms of pancreatic injury listed in A, B, and D would be substantially less likely to cause a pancreatic laceration.

References:
7. Which statement best characterizes CBD dilatation after cholecystectomy

A. The published data on post-cholecystectomy CBD dilatation is non-controversial
B. The CBD dilatation post-cholecystectomy is a rare feature on ultrasound
C. The CBD dilatation post-cholecystectomy does not usually exceed 10 mm
D. The CBD dilatation post-cholecystectomy is gender specific

Correct Answer: C
Rationale: Two publications following patients after cholecystectomy have shown that CBD dilatation does not exceed 10 mm; in fact, most measurements were still within normal limits. These data are from adults.
References:

8. Based on the MR images shown, what is the most likely cause of common bile duct dilatation?

A. Papillomatosis
B. Cholangiocarcinoma
C. Embryonal rhabdomyosarcoma
D. Hemobilia

Correct Answer: C
Rationale: Embryonal rhabdomyosarcoma appears as polypoid intraluminal projections that may have cystic spaces. It most commonly involves extrahepatic bile ducts but may originate in or grow into intrahepatic biliary ducts.
References: