GI IMAGING: CASE BASED LESSONS

Ellen C. Benya, MD
Ann and Robert H. Lurie Children’s Hospital, Chicago, IL
2 yo boy with abdominal distention and vomiting
Previously healthy child
No history of prior abdominal surgery
Symptoms started 6 days ago
Initial improvement with NSAIDs but then
Worsened with poor PO intake and vomiting
Differential Diagnosis

- Ileocolic intussusception
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- “Can’t be anything else”
Moved Next to Contrast Enema
No intussusception, reflux into TI
Ileocolic Intussusception excluded by enema
Ileoileal intussusception with lead point
Volvulus
Obstruction due to congenital mesenteric defect
Complicated appendicitis
Surgical Exploration revealed Perforated Appendicitis
Common things are common, but make sure you haven’t put on blinders

Do abdominal ultrasound to confirm intussusception and exclude other pathology before proceeding to contrast or air enema
2 yr girl old with intermittent abd pain and NBNB emesis
Admitted for observation after negative air contrast enema

Detailed H&P on admission adds that child has sensory processing disorder with pica, eating hair and stuffing from pillows

Further evaluation with CT examination
Trichobezoars

- Often associated with underlying psychological or behavioral issues
- Common complications include early satiety, nausea/vomiting and abdominal pain
- Less commonly associated with gastric ulcers, bleeding, perforation, bowel obstruction including small bowel intussusceptions and pancreatitis
Trichobezoar extends through pylorus into SB
Peristalsis around intraluminal material can lead to contraction and constriction of bowel with potential for necrosis and perforation
May also act as lead point for small bowel intussusceptions
For unusual cases always take a moment to do a literature search
References

14 yr old male with abdominal pain and fullness
Treated for medulloblastoma at age 2yrs.
Subsequent recurrence successfully treated
Mild developmental delay
No history of prior VP shunt
No history of abdominal surgery
CT shows large low attenuation lesion with free fluid in pelvis
Differential Diagnosis

- Large omental or mesenteric cyst
- Enteric duplication cyst
- Lymphangioma
- CSF pseudocyst - considered unlikely given lack of prior VP shunt
Follow up Ultrasound
Revised Differential Diagnosis

- Solid tumor arising from stomach
- Lymphoma
- Other benign or malignant neoplasm
- Intraabdominal medulloblastoma mets – unlikely without history of VP shunt
Mass was resected along with transverse colon

- Final Pathologic Diagnosis = Desmoid Tumor
Abdominal Desmoid Tumors

- Rarely seen in children
- Often large in size at diagnosis
- Majority are sporadic lesions
- 9-18% associated with familial adenomatous polyposis or Gardner’s syndrome
- Histology affects imaging appearance; myxoid vs collagenous stroma
Lesson Learned

- Things are not always what they initially appear. Remember that low attenuation lesions on CT might be solid not cystic. Internal contents are better assessed on US.


4 mo old girl with abd distention and NBNB emesis for 2 days
US limited due to bowel gas, followed by contrast enema.
3 weeks prior UGI was done at outside hospital because of abdominal distention and vomiting.

Child’s uncle had bowel surgery as an infant; parents were unsure of diagnosis or procedure.

Diagnosis = Total colonic aganglionosis.
Look beyond the obvious findings for subtle diagnostic clues
9 yr old boy with worsening fatigue and SOB
9 yr old boy with worsening fatigue and SOB

- Known polysplenia
- s/p Ladd’s procedure for malrotation at 3 days of age
- Echo as infant with PFO, PDA and interrupted IVC
- Diagnosed with asthma at 4 yrs old
- Pneumonia 1x/yr
US confirmed polysplenia, interrupted IVC with PV not seen
Coronal Sequence from Cardiac MRI
Associations with Polysplenia

- Congenital cardiac defects
- Biliary atresia
- Bowel malrotation
- Shortening of the pancreas
- Interruption of intrahepatic IVC
- Preduodenal portal vein
- Congenital extrahepatic portosystemic shunt (aka Abernethy malformation)
Abernethy Malformation

- Congenital extrahepatic portosystemic shunt
- Type determined by absence (type 1) or presence (type 2) of intrahepatic portal veins.
- Hyperammonemia may cause encephalopathy
- Typically without signs of portal hypertension
- May present with portopulmonary HTN and portopulmonary syndrome
Abernethy Malformation

- Type of CEPS determines treatment
- CEPS type 1 require liver transplantation
- CEPS type 2 can be treated with shunt occlusion
- May be associated with nodular liver lesions
Lessons Learned

- Complicated cases require thorough evaluation and correlation with multiple imaging modalities
- Consult your colleagues


7 week old girl with jaundice and direct bilirubinemia
Initial Management of Neonatal Cholestasis

MEDICAL
- Infectious
- Hypothyroidism
- Cystic fibrosis
- Enzyme deficiencies
- Genetic syndromes

SURGICAL
- Biliary atresia*
- Choledochal cyst
- Bile plug syndrome

*prompt detection improves outcome
Sonographic Evaluation

- Initial search to look for presence of
  - Choledochal cyst
  - Bile plug syndrome
  - Polysplenia
  - Gallbladder
US Diagnosis of Biliary Atresia

- Triangular cord sign
- Gallbladder contraction/wall
- Hepatic artery diameter
- Subcapsular hepatic vessels
- Echogenic triangular density cranial to PV bifurcation
- Fibrotic remnant of atretic biliary duct
- > 4mm echogenic anterior wall of right portal vein
- Specificity is higher than sensitivity
Pseudogallbladder Sign

- Fluid filled structure seen in region of the gallbladder fossa
- < 1.5 cm in length
- Lacking a normal gallbladder wall
Look for multiple signs to increase confidence in your diagnosis.
