Interesting Cases in Abdominal Sonography

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Objectives

› Identify the sonographic appearance of pathology of the abdominal organs
› List pertinent laboratory finding associated with a variety of diseases
› Correlate sonographic imaging with other imaging modalities
› Discuss the outcome, treatment, and prognosis for a variety of abdominal diseases

HELLP Syndrome

› Hemolysis, Elevated Liver enzymes, Low Platelets
› Pregnancy complication
  • Increased in severe pre-eclampsia
  • Increased risk of morbidity and mortality

Etiology

› Not completely understood
  • Change in immunologic response
  • Platelet aggregation
  • Endothelial dysfunction
  • Arterial hypertension

Complications

› Placental abruption
› Respiratory distress
› Hepatorenal failure
› Ascites
› Pulmonary edema
› Subcapsular hematoma and hepatic rupture

Hepatocellular Carcinoma

› Primary liver cancer
› Increasing in frequency in U.S.
  • ↑ prevalence of Hepatitis C
  • Other risk factors: Hepatitis B, cirrhosis
› Treatment and monitoring
  • Surveillance and AFP testing
  • Transplantation
  • Tumor ablation

Hemolysis, Elevated Liver enzymes, Low Platelets

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Other risk factors: Change in immunologic response, Platelet aggregation, Endothelial dysfunction, Arterial hypertension
Sonographic findings
- Hypoechoic
- Hyperechoic
- Complex
- Solitary
- Diffuse

Schistosomiasis
- Caused by parasitic worms
- Live in contaminated water
  - In developing countries
- 5 different species
- Larvae penetrate skin and migrate to organs

Clinical Presentation
- Asymptomatic
- Fever
- Cough
- Hepatosplenomegaly
- Diarrhea
- Abdominal pain
- Weight loss

Sonographic findings
- Wide echogenic portal tracts
- Liver enlargement
- Chronic
  - Contracted liver
  - Features of portal hypertension

Treatment
- No vaccine
- Limited success with behavioral and environment modifications
- Praziquantel: 85–90% cure rate

Metastatic Disease
- 18–20 x’s more common than primary cancer in U.S.
- Poor prognosis
- Primary sites: GI, gallbladder, pancreas, breast, lung
Sonographic findings

- Target pattern
- Hypoechoic
- Hyperechoic
- Solid
- Complex
- Necrotic
- Calcified
- Diffuse
- Multiple

Sclerosing Cholangitis

- Progressive, chronic inflammatory disease
- Leads to cirrhosis
- Associated with cholangiocarcinoma
- Treatment of choice
  - Liver transplant

Clinical Presentation

- IBD may lead to diagnosis
- Symptoms
  - Fatigue
  - Pruritis
  - Abdomen pain
  - Fever

Sonographic findings

- Bile duct wall thickening
- Dilated ducts
- Choledocholithiasis
- Cirrhosis
  - With advanced disease

Choledocholithiasis

- Primary
  - Sclerosing cholangitis, Caroli’s disease, parasites, hemolytic diseases, etc.
- Secondary
  - Migration of gallstones

Sonographic findings

- Highly echogenic
- Shadows
- Small stones may not shadow
Gangrenous Cholecystitis
- Severe form of acute cholecystitis
- May lead to perforation
- Requires emergent removal

Sonographic findings
- Bands across lumen
- Irregular wall
- Pericholecystic fluid

Pancreatic Cancer
- Primary cancer
  - Adenocarcinoma
  - > 60
  - Painless jaundice
- Diagnosed late
  - Poor prognosis

Sonographic findings
- Poorly defined
- Hypoechoic
- Homogeneous
- Heterogeneous
- Dilated pancreatic duct
- Dilated bile duct

Pyelonephritis
- Common
- Women > men
- Common cause: *E. coli*
- Primarily a clinical diagnosis
  - Flank pain
  - Fever
  - Lab results

Sonographic findings
- Normal
- Enlarged kidney
- Compressed sinus
- Hypo or hyperechoic
- Loss of corticomedullary differentiation
- Gas in parenchyma
Renal Cell Carcinoma
- 90–95% of renal cancer
- M > F
- Risk factors: ↑ age, smoking, obesity, dialysis, carcinogens, genetic syndromes
- Prognosis depends on tumor extension

Sonographic findings
- Solid
- Hypoechoic
- Isoechoic
- Hyperechoic
- Calcification
- Cystic necrosis

Transitional Cell Carcinoma
- Most common in bladder
  - May affect ureter and kidney
- M > F
- Risk factors
  - Smoking, renal disease, carcinogen exposure

Clinical presentation
- Hematuria
- Flank pain
- Asymptomatic
- Hematuria
- Frequency
- Dysuria
- Suprapubic pain

Sonographic findings
- Solid mass in sinus
- Hypoechoic
- Hydronephrosis
- Focal non-mobile mass
- Wall thickening

Kidney tumors
Bladder tumors

Tuberous Sclerosis
- Autosomal Dominant
- Genetic mutations: \( TSC1 \) or \( TSC2 \)
- Manifest with benign tumors
  - Brain
  - Heart
  - Kidneys
  - Eyes
  - Skin
### Diagnosis
- *In utero* diagnosis possible
  - Fetal rhabdomyoma
  - Round, homogeneous, echogenic
  - May be earliest sign
- Sonography
- CT
- MRI

### Sonographic findings
- Angiomyolipomas
  - Highly echogenic
  - Round
  - Attenuating
- Renal Cysts

### Urethral Diverticulum
- Result of infection and obstruction of paraurethral ducts and glands
- Congenital or acquired
- Increased in middle-aged women

### Clinical Presentation
- 3 D's
  - *Dysuria*
  - postvoid
  - *Dribbling*
  - *Dyspareunia*
- Frequency
- Urgency
- UTI's
- Hematuria
- Discharge
- Retention
- Mass

### Complications
- Urinary incontinence
- Recurrent UTIs
- Calculi formation
- Malignancy

### Diagnostic procedures
- Urethroscopy
- Voiding cystourethrogram
- Double balloon urethrogram
- Urodynamics
- **Sonography**
  - Magnetic resonance imaging
  - Computed tomography
Treatment

- No treatment when asymptomatic
- Surgical options
  - Widen the diverticulum
  - Diverticulectomy

References