DMS-1401: ABDOMINAL SONOGRAPHY I

Cuyahoga Community College

Viewing: DMS-1401 : Abdominal Sonography I

Board of Trustees:
November 2020

Academic Term:
Fall 2021

Subject Code
DMS - Diagnostic Medical Sonography

Course Number:
1401

Title:
Abdominal Sonography I

Catalog Description:
Study of adult and pediatric normal anatomy and anatomic variants, physiology, pathology, and pathophysiology of the upper abdomen, peritoneal and retroperitoneal cavity including potential spaces, non-cardiac chest, liver, gallbladder, pancreas, urinary system, gastrointestinal system, and abdominal vasculature as visualized by ultrasound. Includes Doppler and color Doppler applications for the liver, gallbladder, pancreas, urinary system, gastrointestinal system, portal system, and great vessels and correlation to other imaging modalities. Correlation to other imaging modalities. Discuss imaging specifics related to medical and surgical interventions that are more often associated with specific populations.

Credit Hour(s):
4

Lecture Hour(s):
4

Requisites

Prerequisite and Corequisite
Concurrent enrollment in DMS-1311 Initial Sonographic Scanning.

Outcomes

Course Outcome(s):
Assess the indications for and follow the protocols of an ultrasound examination for the peritoneal and retroperitoneal cavities, non-cardiac chest, liver, gallbladder, pancreas, urinary system, gastrointestinal system, and abdominal vasculature.

Objective(s):
1. List and explain the indications for performing an ultrasound exam for each of the structures visualized in the peritoneal and retroperitoneal cavities, non-cardiac chest, liver, gallbladder, pancreas, urinary system, gastrointestinal system, and abdominal vasculature.
2. Describe the standard exam scanning protocols for performing an ultrasound exam for each of the structures visualized in the peritoneal and retroperitoneal cavities, non-cardiac chest, liver, gallbladder, pancreas, urinary system, gastrointestinal system, and abdominal vasculature.
3. Explain the patient exam preparation and its purpose for an ultrasound examination of the peritoneal and retroperitoneal cavities, non-cardiac chest, liver, gallbladder, pancreas, urinary system, gastrointestinal system, and abdominal vasculature and any variation allowable for age or medical conditions.

Course Outcome(s):
Provide a technical finding of the peritoneal and retroperitoneal cavities, non-cardiac chest, liver, gallbladder, pancreas, urinary system, gastrointestinal system, and abdominal vasculature ultrasound exam.

Objective(s):

1. Recognize and identify the sonographic appearance of normal anatomic structures of the peritoneal and retroperitoneal cavities, non-cardiac chest, liver, gallbladder, pancreas, urinary system, gastrointestinal system, and abdominal vasculature.
2. Recognize and identify the sonographic appearance of abnormalities, disease, pathology, and pathophysiology of the anatomic structures of the peritoneal and retroperitoneal cavities, non-cardiac chest, liver, gallbladder, pancreas, urinary system, gastrointestinal system, and abdominal vasculature.
3. Explain the process and purpose for ultrasound-guided procedures performed in the abdomen and non-cardiac chest.
4. State the normal measurement values for anatomic structures of the peritoneal and retroperitoneal cavities, non-cardiac chest, liver, gallbladder, pancreas, urinary system, gastrointestinal system, and abdominal vasculature dependent on patients age.
5. Define the purpose of Doppler and color Doppler applications of the anatomic structures of the peritoneal and retroperitoneal cavities, non-cardiac chest, liver, gallbladder, pancreas, urinary system, gastrointestinal system, and abdominal vasculature.
6. Provide a sonographic impression based on assessing and evaluating pertinent related medical data and image information for proposed peritoneal and retroperitoneal cavities, non-cardiac chest, liver, gallbladder, pancreas, urinary system, gastrointestinal system, and abdominal vasculature clinical patient scenarios.

Methods of Evaluation:

1. Written tests/quizzes
2. Midterm and final exam
3. Research report
4. Classroom assignments

Course Content Outline:

1. Concepts
   a. Ethics
   b. Protocols
   c. Scope of Practice
   d. Preparation
   e. Critical thinking
   f. Disease processes
   g. Peritoneal and retroperitoneal cavity structures
   h. Noncardiac chest anatomic structures
   i. Gastrointestinal system anatomic structures and landmarks
   j. Urinary system anatomic structures
   k. Major abdominal vascular structures and landmarks
   l. Liver anatomic structures and landmarks
   m. Gallbladder anatomic structures and landmarks
   n. Pancreas anatomic structures and landmarks
   o. Urinary system structures and landmarks
2. Skills
   a. Using critical thinking to correlate patient medical history and current signs and symptoms with the findings of the exam
   b. Completing worksheets
   c. Correlating medical data
   d. Communicating the exam findings
   e. Identifying normal, normal variants, and abnormal sonographic appearance of the peritoneal and retroperitoneal cavity structures
   f. Identifying normal, normal variants, and abnormal sonographic appearance of the non-cardiac chest
   g. Identifying normal, normal variants, and abnormal sonographic appearance of the gastrointestinal system
   h. Identifying normal, normal variants, and abnormal sonographic appearance of the liver
   i. Identifying normal, normal variants, and abnormal sonographic appearance of the gallbladder and biliary system
   j. Identifying normal, normal variants, and abnormal sonographic appearance of the major abdominal vascular structures
   k. Identifying normal, normal variants, and abnormal sonographic appearance of the pancreas
   l. Identifying normal, normal variants, and abnormal sonographic appearance of the urinary tract
3. Issues
   a. Medical ethics
   b. Exam preparation
   c. Physician interaction
   d. Patient interaction

e. Atypical patients or variability
f. Knowledge retention
g. Verbal and non-verbal communication limitations
h. Surgical intervention and therapeutic intervention in diverse patient populations

Topical Outline

1. Abdomino-pelvic cavity
   a. Development
   b. Anatomy, physiology, pathology, and pathophysiology
      i. Peritoneal cavity
      ii. Retroperitoneal cavity
      iii. Potential spaces
   c. Effects of trauma and complications of injury, disease, or pathology
      i. Laceration or rupture
      ii. Intra-abdominal hemorrhage
      iii. Hematoma
      iv. Thrombosis
      v. Abscess
      vi. Ascites
   d. Tests and lab values
   e. Exam indications
   f. Exam protocol and preparation
   g. Normal and abnormal sonographic appearance
2. Major abdominal vascular structures
   a. Anatomy
   b. Physiology
   c. Pathology/pathophysiology
   d. Tests and lab values
   e. Exam indications
   f. Exam protocol and preparation
   g. Normal, normal variants, and abnormal sonographic appearance
   h. Normal measurement values (adult and pediatric)
   i. Doppler exam protocols and values
   j. Aorta
   k. IVC
   l. Hepatic artery and veins
   m. Renal arteries and veins
   n. Mesenteric arteries and veins
   o. Portal venous system
   p. Transjugular Intrahepatic Portosystemic Shunt (TIPS) evaluation
3. Liver
   a. Anatomy
   b. Physiology
   c. Pathology/pathophysiology
   d. Tests and lab values
   e. Exam indications
   f. Exam protocol and preparation
   g. Normal, normal variants, and abnormal sonographic appearance
   h. Congenital anomalies and abnormalities
   i. Normal measurement values (adult and pediatric)
4. Gallbladder and biliary system
   a. Anatomy
   b. Physiology
   c. Pathology/pathophysiology
   d. Tests and lab values
   e. Exam indications
   f. Exam protocol and preparation
   g. Normal, normal variants, and abnormal sonographic appearance

   h. Congenital anomalies and abnormalities
   i. Normal measurement values (adult and pediatric)
5. Pancreas
   a. Anatomy
   b. Physiology
   c. Pathology/pathophysiology
   d. Tests and lab values
   e. Exam indications
   f. Exam protocol and preparation
   g. Normal, normal variants, and abnormal sonographic appearance
   h. Congenital anomalies and abnormalities
   i. Normal measurement values (adult and pediatric)
6. Non-cardiac chest
   a. Anatomy
   b. Physiology
   c. Pathology/pathophysiology
   d. Tests and lab values
   e. Exam indications
   f. Exam protocol and preparation
   g. Normal and abnormal sonographic appearance
   h. Invasive procedures
   i. Thoracentesis
7. Gastrointestinal
   a. Anatomy
   b. Physiology
   c. Pathology/pathophysiology
   d. Tests and lab values
   e. Exam indications
   f. Exam protocol and preparation
   g. Normal and abnormal sonographic appearance
   h. Normal measurement values (adult and pediatric)
8. Urinary system
   a. Development
   b. Anatomy
   c. Physiology
   d. Pathology/Pathophysiology
   e. Tests and lab values
   f. Exam indications
   g. Exam protocol and preparation
   h. Congenital anomalies and abnormalities
   i. Normal measurement values (adult and pediatric)
   j. Doppler exam protocols and values
9. Invasive and Intraoperative Procedures
   a. Paracentesis
   b. Thoracentesis
   c. Biopsy
   d. Aspiration

Resources

Schmidt, Guenter. (2014) *Differential Diagnosis in Ultrasound*, New York: Thieme.

Curry, Reva Arnez, and Betty Bates Tempkin. (2015) *Sonography: Introduction to Normal Structure and Function*, Philadelphia: Saunders.

Rumack, C. M. & Levine, D. (2018) *Diagnostic Ultrasound*, Philadelphia: Elsevier.

Sanders, Roger C. (2015) *Clinical Sonography: A Practical Guide*, Philadelphia: Lippincott Williams & Wilkins.

Hagen-Ansert, S. L. . (2018) *Textbook of Diagnostic Ultrasonography*, 2 Volumes. St. Louis: Mosby.

Block, Berthold. (2011) *Abdominal Ultrasound: Step By Step*, New York: Thieme.

Curry, Reva Arnez, and Betty Bates Tempkin. (2015) *Workbook and Lab Manual for Sonography: Introduction to Normal Structure and Function*, St. Louis: Saunders.

Kawamura, Diana M, and Bridgette M Lunsford. (2012) *Diagnostic Medical Sonography: Abdomen and Superficial Structures*, Baltimore, MD: Lippincott Williams & Wilkins.

Lunsford, Bridgette M, and Diane Kawamura. (2012) *Workbook for Diagnostic Medical Sonography*, Baltimore, MD: Lippincott Williams & Wilkins.

Bhargava, S. & Bhargava, S. K. (2019) *Differential Diagnosis in Ultrasound*, New Delhi: Jaypee Brothers Medical Pub.

Penny, S. M. (2018) *Examination Review for Ultrasound: Abdomen & Obstetrics and Gynecology*, China: Wolters Kluwer.

Top of page
Key: 1443