

## Ultrasound

### 1. General

- Clinical uses and limitations of commonly performed ultrasound examinations
- Appropriate integration of ultrasound with other imaging modalities
- ACR appropriateness criteria for ultrasound
- Quality assurance and patient safety
- Standard protocols (including requirements for accreditation and billing) of commonly performed examinations (including but not limited to abdominal and obstetrical, vascular Doppler, endovaginal pelvic , aorta)
- Basic principles of gray scale and Doppler (including but not limited to transducer selection, image optimization, biological health risks)
- Standard measurements in routine practice (including but not limited to endometrial stripe, aortic diameter, bi-parietal diameter, head circumference, abdominal circumference, femur length, mean sac diameter, crown rump length, nuchal translucency, lateral ventricle, cisterna magna, common bile duct)

### 2. Normal appearance and common pathology of the following organs/organ systems (including differential diagnosis, work-up and management of patients)

- Abdomen (liver, biliary tree, pancreas, spleen, peritoneal cavity, gastrointestinal tract)
- Chest (pleural space)
- Genitourinary system (kidneys, ureters, urinary bladder, prostate, adrenal glands, retroperitoneum)
- Gynecology (uterus, including endometrium, myometrium, saline sonohysterography; adnexa, including ovary, fallopian tube; cervix)
- Thyroid/neck (including thyroid, parathyroid glands, congenital anomalies, lymph nodes)
- Scrotum (including testes, epididymes, hydrocele/pyocele/abscess, varicoceles, hernias, Fournier's gangrene)
- Musculoskeletal (including tendons, soft tissue masses and lumps/bumps, foreign body, joint effusion, bursal fluid, muscle tear)
- Obstetrics
  1. First trimester (including normal findings of an IUP, correlation with BHCG levels and menstrual dates, ectopic pregnancy including unusual locations, multiple pregnancies, miscarriage/incomplete abortion, fetal demise, anembryonic gestation, poor prognostic signs including subchorionic hemorrhage, gestational trophoblastic neoplasia)
  2. Second and third trimesters (including normal fetal anatomy and biometry, cervix, amniotic fluid, placenta, common anatomic

anomalies and chromosomal syndromes, borderline findings, multiple gestations)

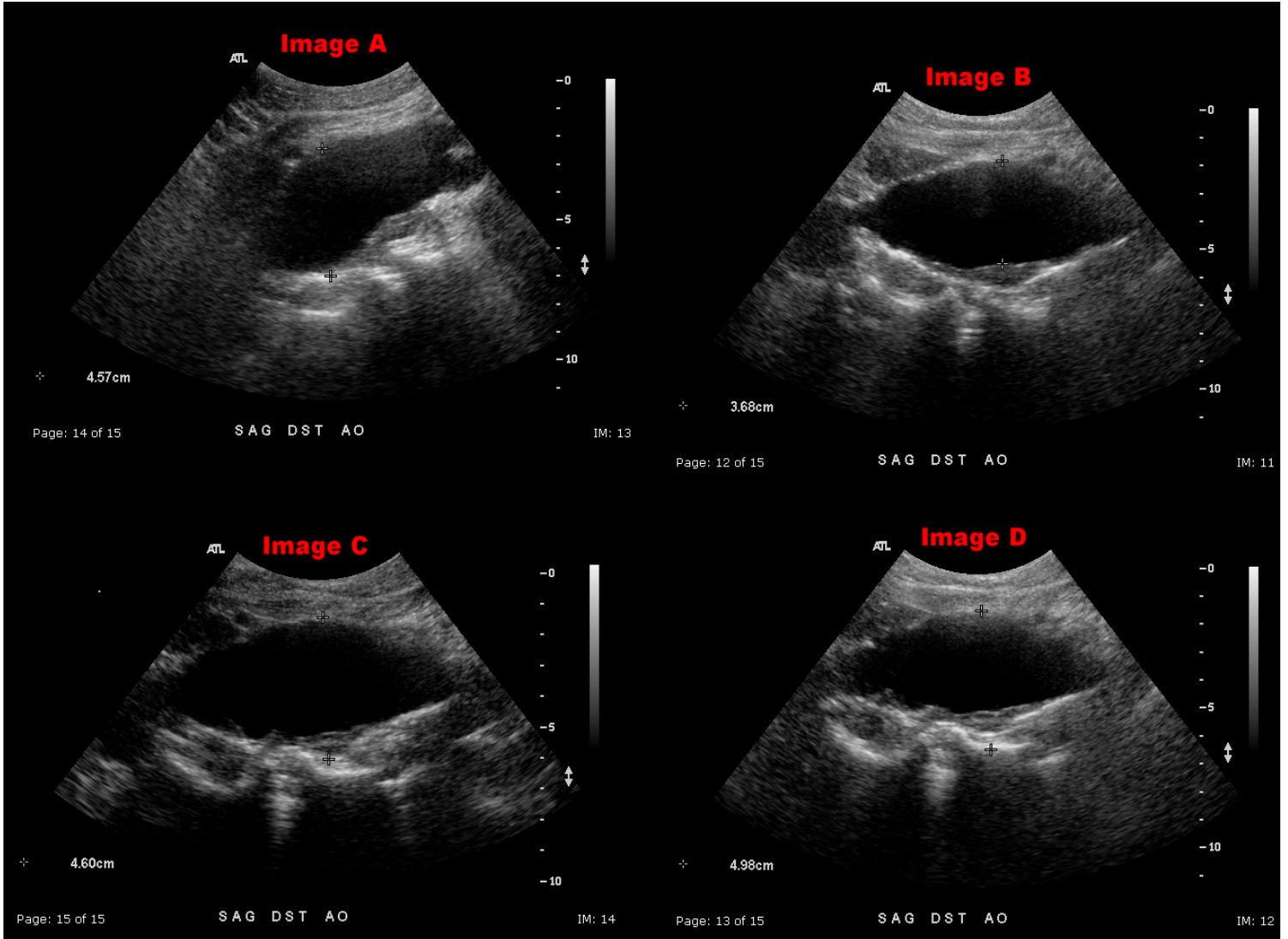
- Vascular
  1. Abdomen (including abdominal aorta, inferior vena cava, hepatic vessels, TIPS, renal, celiac and SMA)
  2. Peripheral (including lower and upper extremity deep vein thrombosis, venous reflux, aneurysm, arterial bypass graft stenosis or occlusion, stenosis or occlusion of native peripheral arteries, pseudoaneurysm, arteriovenous fistula, dissection, hematoma, carotid artery, renal and liver transplant)

### 3. Interventional

- Pre-procedural evaluation (including coagulation laboratory studies, anticoagulation medication)
- Stratification of risk for percutaneous procedures
- Informed consent
- Sterile technique
- Post-procedural evaluation (including radiographic studies, patient monitoring, management of complications)
- Basic principles of percutaneous FNA, biopsy and drainage procedures
- Pseudoaneurysm management (contraindications and technique of non-surgical treatment with ultrasound-guided compression repair versus thrombin injection)

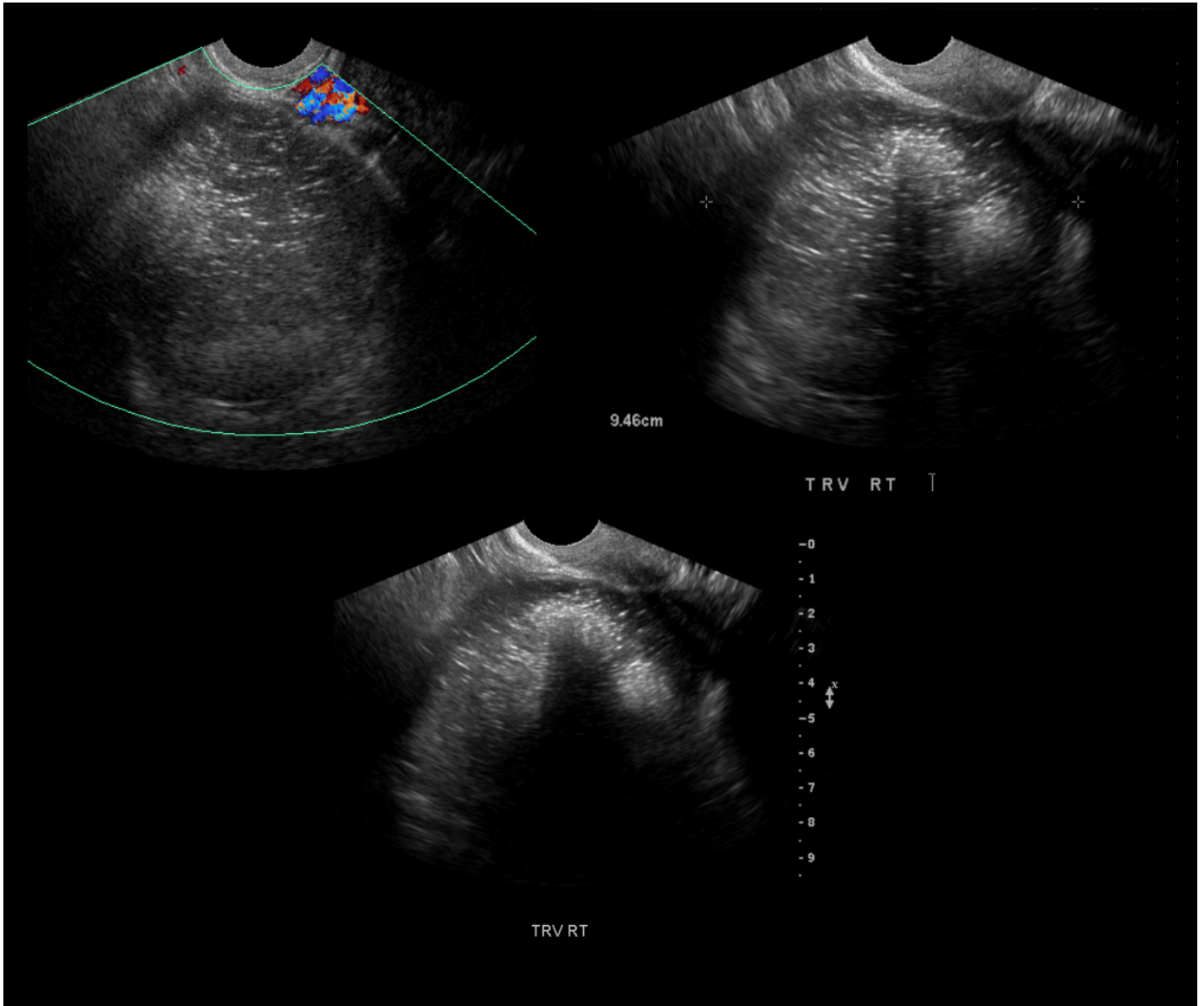
Sample questions:

1. This 66-year-old man was referred for screening ultrasound of the aorta. On which image, is the diameter of the aortic aneurysm measured correctly.



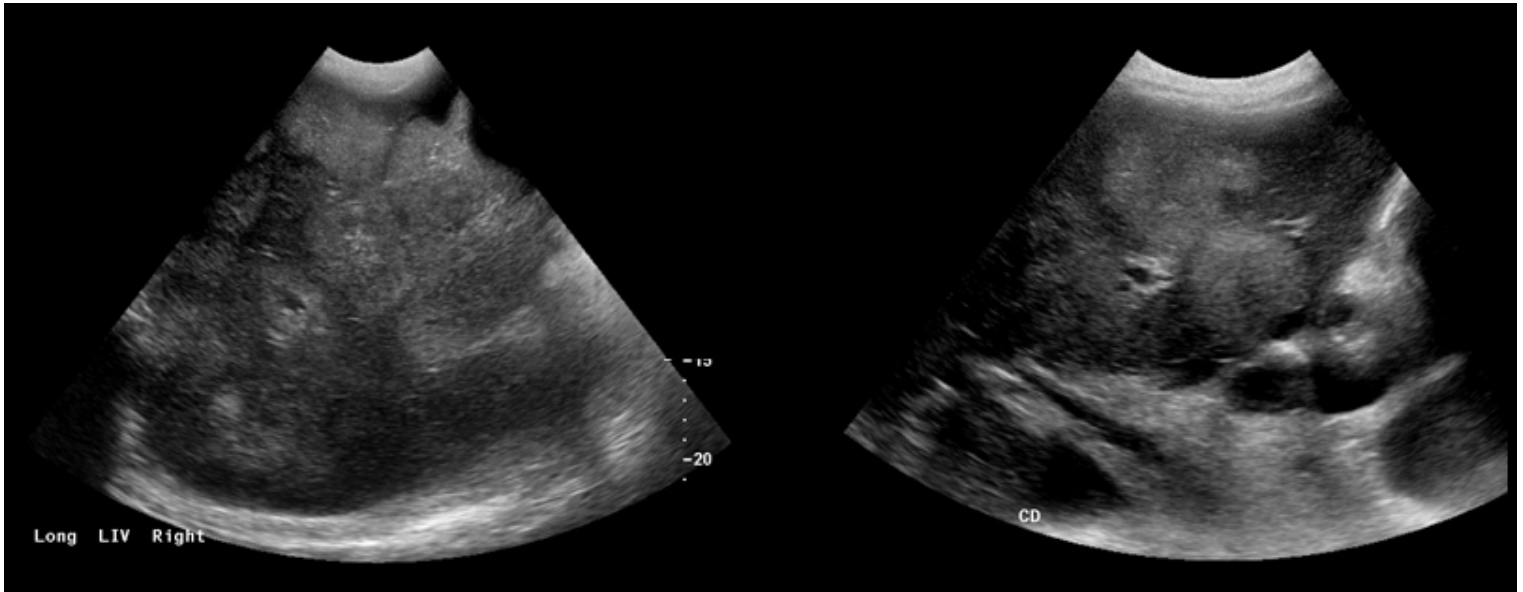
- A. Image A
- B. Image B
- C. Image C
- D. Image D

2. A 23-year-old pregnant woman presents with pelvic pain. Images of the right adnexa are most consistent with which of the following diagnoses?



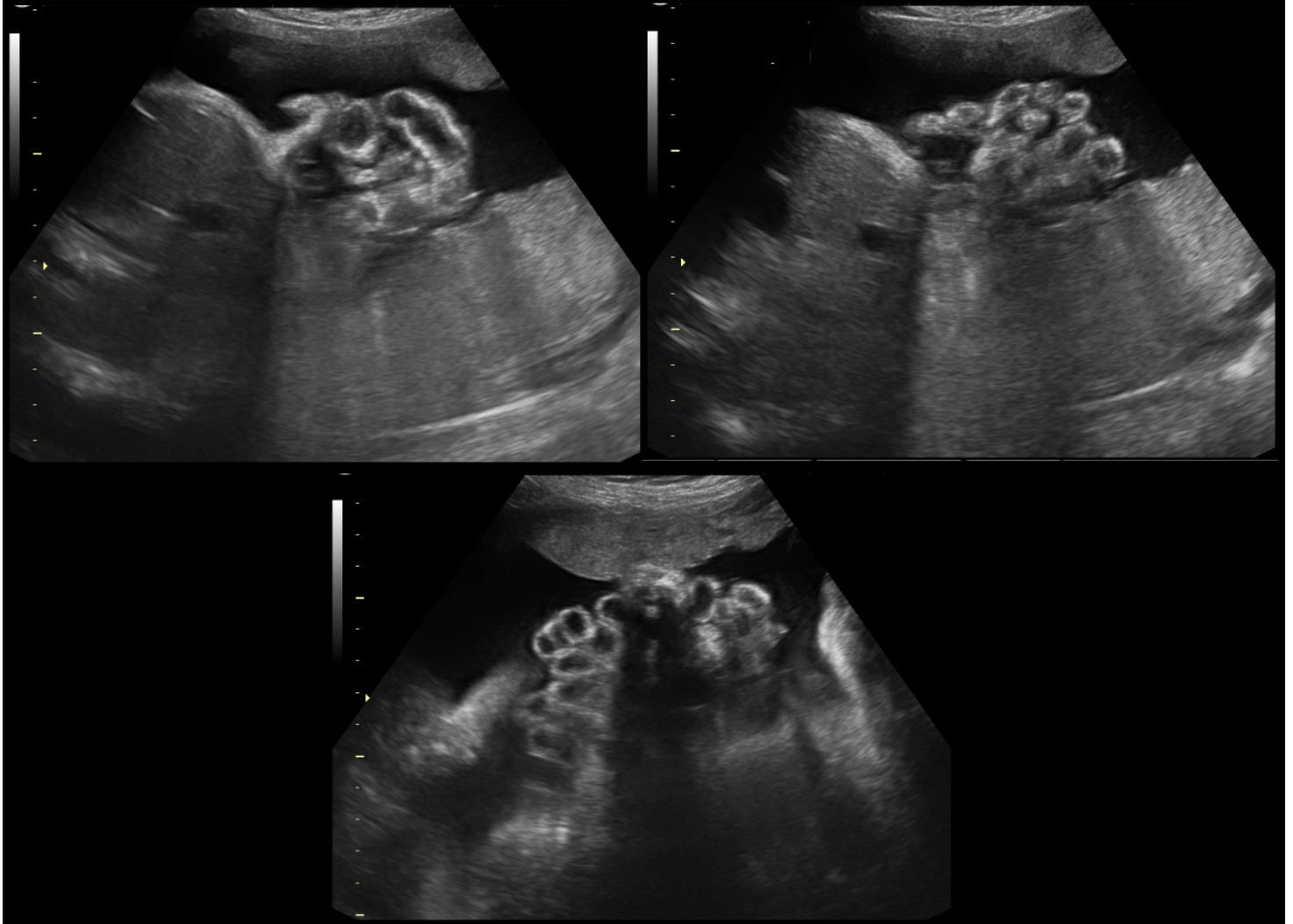
- A. Ectopic Pregnancy
- B. Pelvic Inflammatory disease
- C. Cystic Teratoma of the ovary
- D. Ovarian hyperstimulation syndrome

3. This 57-year-old male has abdominal discomfort. Given these ultrasound images of the liver, what is the most likely diagnosis?



- A. Acute hepatitis
- B. Liver metastases
- C. Echinococcal cysts
- D. Subcapsular hematoma of the liver

4a A 19-year-old pregnant woman has an elevated maternal serum alpha-fetoprotein level. These images of the fetal abdomen are most consistent with which diagnosis?



- a. Bilateral renal agenesis
- b. Gastroschisis
- c. Duodenal atresia
- d. Bilateral multicystic dysplastic kidneys

**YOU WILL BE PREVENTED FROM RETURNING TO PART 1 OF THIS CASE.**

4b. of the following statements are true regarding gastrochisis EXCEPT:

- a. It typically occurs to the right of the umbilicus.
- b. It is less commonly associated with other fetal anomalies than omphalocele.
- c. It is covered by a peritoneal membrane.
- d. Strictures in the bowel may occur.

Answers:

- 1. C
- 2. C
- 3. B
- 4a. B
- 4b. C