

ULTRASOUND MEASUREMENTS

AORTA

Thoracic aneurysm/aortic root

>4 cm diameter

Abdominal aortic aneurysm

>3 cm diameter

Iliac artery aneurysm

>1.5 cm diameter

CARDIAC

Estimating EF w/ EPSS:

- Normal LV function <7 mm
- Mildly reduced: 7-12 mm
- Moderately reduced: 13-18 mm
- Severely reduced: >18 mm
- $EF \approx 75.5 - 2.5 * EPSS = LVEF$

Cardiac tamponade

- RV diastolic inversion
- RA systolic inversion
- IVC plethora
- Excessive respirophasic variation in Doppler inflow velocities (pulsus):
- >25% across MV
- >50% across TV

PE (right heart strain)

- RV free wall < 5 mm c/w acute right heart strain
- TAPSE < 17 mm
- RV:LV diameter ≥ 0.9

Quantify Pericardial effusion

- Small <1 cm
- Moderate 1-2 cm
- Large >2 cm

CARDIAC (CONT.)

Diastology

- Normal: $E > A$
- Impaired relaxation: $E < A$
- Pseudonormal $E > A$, $e' < 8$ cm
- Restrictive: $E >> A$, E 150-200 cm/s
- Normal $e' > 8$ cm
- Normal $E / e' < 15$ (elevated LVEDP)

BILIARY

Cholecystitis

- >3 mm wall thickness
- >4 mm CBD (should be < 1st # of pt's age, < 10 mm is normal in pts w/o GB)

Hepatic

- Hepatomegaly if >15.5 cm in superior-inferior dimension

BOWEL

SBO

- >2.5 cm diameter
- >3 mm wall thickness
- Keyboard sign
- Tanga sign

Appendicitis

- >6 mm dilatation
- Not compressible
- No peristalsis
- Adjacent fluid
- Echogenic fat
- Appendicolith

ULTRASOUND MEASUREMENTS

PYLORUS

- Normal thickness 3 mm, length 14 mm ($\pi=3.14$)

OB

Intrauterine pregnancy

- Normal FHR: 120-160
- Discriminatory zone TVUS 1,000-1,500 B-hCG
- Gestational sac (4-6 wks) + yolk sac (5-7 wks) or fetal pole (>7 wks)
- Crown rump length greater than 7 mm should have a heart beat transvaginally
- Gestational sac should have a yolk sac at 17 mm
- MSD = $(L+H+W)/3$

Ectopic pregnancy

- Extrauterine yolk sac/fetalpole
- Tubal or adnexal ring/mass
- Absence of yolk sac if mean sac diameter > 10mm
- Absence of fetal pole if mean sac diameter > 18 mm
- Moderate-large pelvic free fluid, especially if complex

Interstitial ectopic

- Eccentric gestational sac
- Myometrial mantle <8 mm
- Interstitial line sign

OCULAR

Papilledema

- ONSD > 5mm measured 3 mm posterior to globe
- Optic disc elevation (from top to arc of posterior orbit) > 1mm

RENAL

Bladder volume

- $L \times W \times H \times 0.75$ (>100mL c/w retention)

FAST

- 0.5 cm stripe at Morison's ~ 500 cc fluid
- 1 cm stripe at Morison's ~1,000 cc fluid

THORACIC

Quantifying Pleural effusion

- Balik formula = max distance in supine pt @ end-exp in cranio-caudal dimension \rightarrow mL of pleural fluid = mm x 20