CORE ULTRASOUND IMAGE REVIEW JULY 2020 SHOW NOTES

Prepared by: Dr. Wes Barnett

Gall Bladder US General

- Obtain the view: Start by placing the curvilinear probe or phased array probe. Align the curvilinear probe in the sagittal plane approximately 7cm to the left of the patient's xiphoid. The probe marker should be cephalad (toward the head).
- Further learning: https://www.coreultrasound.com/gallbladder/

Gallbladder #1 (0:50-4:13)

- Normal gallbladder aka cold bag: Anechoic or minimally hypoechoic sac-like structure without sludge or stones. Wall thickness <3mm, no pericholecystic fluid (hypoechoic and located around the gall bladder). The large vessel next to the gall bladder is the portal vein. The smaller common bile duct and hepatic artery can also be seen, color flow can differentiate the two as the hepatic artery will have pulsatile color flow and the common bile duct will have no flow.
    - Stones: hyper-echoic rim-like structures within the gall bladder with posterior acoustic shadowing. Majority of stones are asymptomatic. They become symptomatic when they become lodged in the neck and block the bile from exiting the gallbladder.
    - Sludge: mixed echogenic fluid within the gall bladder

Gallbladder #2 (4:14-5:38)

- Pathologic gallbladder aka hot bag: pericholecystic fluid can be visualized surrounding the gallbladder. No stones can be visualized although the gall bladder neck is obscured by artifact. Findings of inflammation indicate cholecystitis and lack of stones make the diagnosis of acalculous cholecystitis likely.
- Echogenicity of the gall bladder wall itself is not of importance for determining pathology, only thickness. >3mm is indicative of a pathologic gallbladder.

Gallbladder#3 (5:39-7:06)

- Pathologic gallbladder: pericholecystic fluid can be visualized surrounding the gall bladder. There is stranding within the fluid where it is organizing and eventually likely will complicate into an abscess without intervention. The lumen of the gallbladder is more hyperechoic than one would anticipate. This cloudy lumen is signifying a gall bladder full of sludge. The enfolding of the gall bladder is a normal variant and not significant.

Cardiac US General

- Obtain the view: the probe of choice is the phased array probe. All cardiac views mentioned are under assumption that the ultrasound machine is under cardiac settings with the probe marker located on the RIGHT of the screen.
    - Apical 4-Chamber (A4C) View: the phased array probe should be positioned inferior to the nipple on males or in the inframammary fold on females. The probe marker should be pointing toward the patients left and the probe should be perpendicular to the skin or slightly angled pointing toward the patient's head.
    - Parasternal Long Axis View: visualize a horizontal line connecting the nipples (aka the nip-line) and a vertical line along the left sternal border. Place the probe at the intersection of the lines with the probe marker pointing toward the patient's right shoulder.
    - Expert tip: If you are ever having trouble obtaining a view have the person lay in the left lateral decubitus position and re-attempt.

- For more info on fine tuning your cardiac views see: https://www.coreultrasound.com/how-to-obtain-cardiac-windows/

Cardiac #1 (7:07-11:29)

- Apical 4-Chamber View is seen. There is a large accumulation of fluid in the pericardial sac.
- The dreaded complication of pericardial effusion is cardiac tamponade. It is important to remember that tamponade is more dependent on the rate of accumulation of fluid in the pericardial sac rather than the total amount of fluid.
- To diagnose tamponade, you record multiple cardiac cycles with your ultrasound and review the clip in slow motion. You are looking for right ventricular diastolic collapse. This means that both the tricuspid valve is open between the right atrium and right ventricle and the right ventricle is collapsing into itself while this valve is open. This is important because collapse of the ventricle during systole is expected as the myocardium contracts and can be rather prominent in a hypovolemic patient (not tamponade) It is for this reason you should always review the ultrasound slowly and never call tamponade in real-time.
- If you have evidence of tamponade on ultrasound, irrespective of hemodynamic stability, it is tamponade. If you wait for hemodynamic instability to call it tamponade now you have done yourself and the patient a disservice as you are behind the 8-ball in resuscitation. In fact, early tamponade blood pressure will be hypertensive as sympathetic drive is attempting to maintain cardiac output.
- For further learning see: https://www.coreultrasound.com/pericardial-effusion/ https://www.coreultrasound.com/pericardial-tamponade/

Cardiac #2 (11:30-12:06)

- A predominantly Parasternal Long Axis View is seen. A vegetation is evidenced on the Aortic Valve.
- Any valve that looks like it has a booger on it is likely a vegetation, and any vegetation is endocarditis until proven otherwise.

Cardiac #3 (12:07-15:47)

- Apical 4-Chamber View is seen. There is a vegetation on the Tricuspid Valve and possibly the Mitral Valve.
- Pro tip: Z-packs are not recommended for endocarditis.
- Pro tip: it is uncommon to have a true vegetation without some regurgitation. If you are on the fence, throw color doppler over the valve and look for any regurgitant flow.
- For further learning see: https://www.coreultrasound.com/endocarditis/