Liver Doppler Protocols: Does One Size Fit All?
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How is Doppler Helpful?
• Direction of flow
• Patency of vessels
• Velocity
• Spectral waveforms
• Varices
• Resistance indices

How have Doppler Examinations Changed?
• Doppler EVERYTHING for EVERY reason
• Doppler can provide additional information and proven to be helpful for providing clinicians direction for care
• Workflows more demanding
• More portables
  • Prevent harmful ergonomics and MSK injuries
• Focused scan

Abdominal Doppler Indications
• Ordering clinicians absolutely should give proper study indication
• Avoids repeat scanning due to improper or unclear order
• Prevent unnecessary scanning for sonographers and patients

Starting point...

Transitioned to...

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Abdominal Doppler Complete

- MHA
- MPV
- RPV (Anterior & Posterior)
- LPV
- SV Hilum
- SV behind pancreas
- RHV
- LHV
- MHV
- IVC
- Area of EG junction and round ligament

*GS, color, no spectral on LPV, RPV, EG junction if normal*

Elevated Liver Function Tests

- Abnormal liver function tests (LFTs)
  - mostly perform grayscale ultrasound without Dopplers
- If Doppler is indicated:
  - MHA
  - MPV
  - LPV
  - RPV
- Only if MPV is pulsatile:
  - RHV
  - LHV
  - MHV
  - IVC

Liver Transplantation

Pre-Operation
- MHA
- MPV
- SV behind pancreas
- CBD

Post Liver Transplant (First Scan)

- MPV
- RPV (Anterior & Posterior)
- LPV
- MHA
- HVA
- MHV
- IVC
- BHV
- LHV
- MHV

*Resistive indices

The hepatic veins are not a routine part of follow-up for vascular patency of the first post-operative study showed normal hepatic veins.

Transjugular Intrahepatic Portosystemic Shunt (TIPS)

Portal Vein Thrombosis and Cavernous Transformation

- MHA
- MPV
- LPV
- RPV
- RPV (Anterior & Posterior branches)
- SV behind pancreas

*No spectral on RPV branches*
Budd Chiari and Veno-Occlusive Disease
- MPV
- RHV
- LHV
- MHV
- IVC

What about Right Upper Quadrant or Abdominal Pain?
- Important to contact referring physician to obtain background on patient
- Acute cholecystitis, mesenteric ischemia, aortic dissection, portal vein thrombosis?
- Possibly not a Doppler exam?

General Doppler Comments
- Confirm suspected varies in portal hypertension with color Doppler
  - No spectral waveforms necessary
- Evaluate new tumors with color Doppler
  - For suspected HCC evaluate adjacent portal and hepatic veins for thrombosis
- Look for arterial signals in these thrombus to look for tumor thrombus
- Optimization:
  - Color and spectral scale
  - Color box
  - Use power Doppler when necessary
  - Decrease image sector in difficult scans

Questions for the Future
- Is MHA needed for all indications?
- Is color Doppler needed for every abdominal Doppler examination?
- Do we condense the Doppler protocols for portable and/or limited examinations?
- Is it time to move towards more focused Doppler exams?

Conclusions
- Need radiologists and lead technologist support and point person for coordination
- Decrease MSK injuries to sonographers by limiting scanning time
- Shorter protocols don’t always lead to unanswered questions
- Abdominal Doppler can be focused to answer the clinical questions without having to compromise examination quality

Thank You!
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“There’s a way to do it better – find it.”
— Thoreau