Sonography in Hypotension and Cardiac Arrest: SHoC - Hypotension

Derivation of an evidence based consensus algorithm for the integration of point of care ultrasound into resuscitation of hypotensive patients.

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@eccucourse @sjrhem

No industry sponsorships or conflicts
SHoC - Hypotension

- Pre-hospital and ED hypotension predicts hospital mortality
- High mortality rates (8-32%)
  - Jones 2004, 2006
- Difficult clinical scenarios – e.g. hypotensive breathless elderly patient fluids vs. pressors?
- Protocols for PoCUS in Hypotension
  - Jones et al 2004
  - ACES Protocol 2009
  - RUSH Protocol 2010
  - Others...
- We wished to design an evidence based consensus "SHoC" protocol for PoCUS in hypotension

Methods

- We summarized and presented the recorded incidence of PoCUS findings from the initial cohort during the interim analysis of two prospective SHoC-ED studies (151 patients).
- These were presented to and further developed by a panel of 24 international experts associated with five professional organizations led by the International Federation of Emergency Medicine.
- A modified Delphi tool was developed to reach an international consensus on how to integrate ultrasound into cardiac arrest algorithms for emergency department patients.
Results

- Consensus was reached following three rounds, using a 2/3 threshold for agreement.
- The agreed protocol focuses on the views and timing/hierarchy of PoCUS as well as the specific clinical questions.
- Fluid Form Function Filling

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<th>View</th>
<th>Core</th>
<th>Supplementary</th>
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Results

• CORE

1. **Cardiac views** (Sub-xiphoid and parasternal windows)
   Look for pericardial fluid, cardiac form and ventricular function

2. **Lung views**
   Look for pleural fluid and B-lines for filling status

3. **IVC views**
   Look for filling status

• Supplementary

4. Other cardiac views (parasternal short; apical)

• Additional (when indicated)

5. Look for peritoneal fluid, aorta, pelvic for IUP, and proximal leg veins for DVT.
Conclusions

We present this consensus incidence based SHoC - hypotension guideline on incorporating PoCUS into the management of hypotensive patients. The guideline has been approved by the International Federation for Emergency Medicine Ultrasound Subcommittee.

**SHoC – Cardiac Arrest**
- **Core - Subxiphoid and parasternal cardiac views**
  - Performed during the rhythm check pause in chest compressions.
  - Look for pericardial fluid, ventricular form (e.g., right heart strain) and function (e.g., asystole versus organized cardiac activity).
- **Supplementary - Lung views; IVC views**
  - Look for absent lung sliding in pneumothorax; for pleural fluid; and IVC size for filling.
- **Additional ultrasound applications** include endotracheal tube confirmation, proximal leg veins for DVT, or for sources of blood loss (AAA, perineal/pelvic fluid).

**SHoC – Hypotension**
- **Core - Subxiphoid and parasternal cardiac views; Lung views; IVC views**
  - Look for pericardial fluid, ventricular form (size and shape) and function (hyper/hypo-dynamic); for pleural fluid; and for B-lines and filling status.
- **Supplementary - Additional cardiac views**
- **Additional ultrasound applications** (when clinically indicated) include: sagittal views for DVT; pelvis for IUP; and for sources of blood loss (AAA, perineal/pelvic fluid).