

Use POCUS to FOCUS

How POCUS help your ED work-up and management?

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Introduction:

Point of care ultrasound (POCUS) plays an important role in the care of patients in the Emergency Department (ED) and critical care units. In our case, we present the use of a novel POCUS mnemonics to help diagnose fatal clinical conditions.

Case presentation:

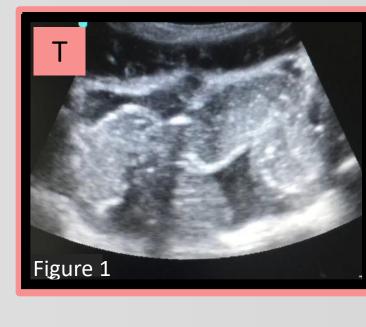
- **History**: 82 year old male patient presented to the ED after a syncopal episode. He was only complaining of mild abdominal pain and chronic constipation. He Denied chest pain or dyspnea.
- **Physical Exam:** BP 112/67 mmHg HR 167 beats per minute (irregularly irregular), RR 18/min, SPO2 97%, Temperature 36.3. The rest of the physical exam was unremarkable.
- Diagnostic work-up: EKG: Atrial fibrillation (AF), D-dimer 3.89 mg/ml, troponin 0.21 ng/ml and and serum Lactate 7.3 mmol/L
- ED Management: Rate control was initiated.
- Differential diagnosis:
 - Pulmonary embolism given new onset AF, syncope and elevated D-dimer.
- Mesenteric ischemia given new onset AF, mild abdominal symptoms and elevated lactate.

 ED Course:
- The mnemonic **ACUTE** was used to help evaluate a patient who presented to the ED with acute abdomen (Table 1-A). We examined the **A**bdominal Aorta, Inferior vena cava, evaluated for signs of perforated viscus, free fluid in the abdomen, and signs of ectopic pregnancy. In our case we found positive <u>free fluid in the abdomen with thickened bowel loops</u> (Figure 1). Based on our findings, the decision of CT Abdomen/Pelvic + contrast was taken to rule out mesenteric ischemia.



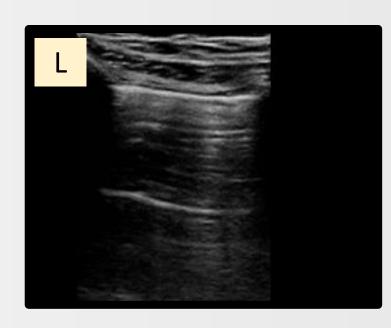


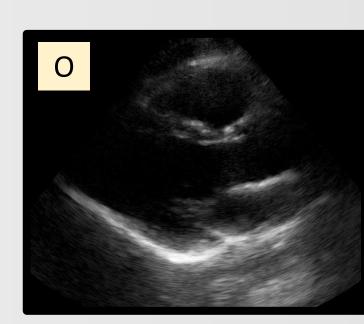




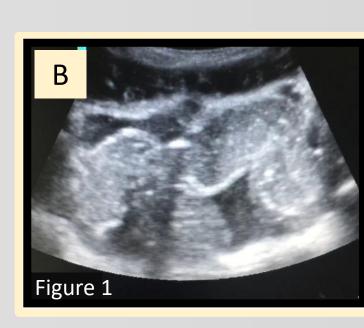


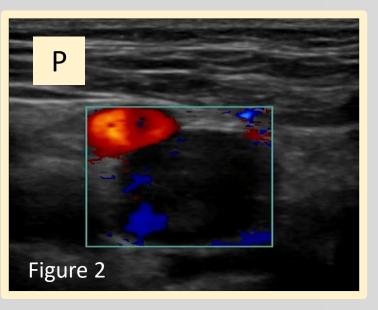
• Shortly before the CT scan; the patient became hypotensive, tachycardiac and hypoxic. Resuscitation was initiated and patient was re-evaluated using POCUS mnemonic **LOW BP** to identify possible etiology of acute decompensation (Table 2). The ultrasound exam revealed <u>free fluid in the abdomen (which was identified in the prior study)</u>, and <u>positive DVT in the right femoral</u>. A pulmonary angiogram was planned to rule out pulmonary embolism.



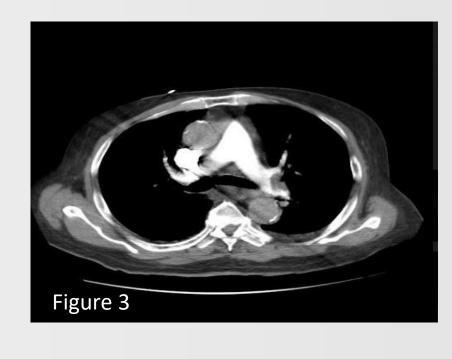




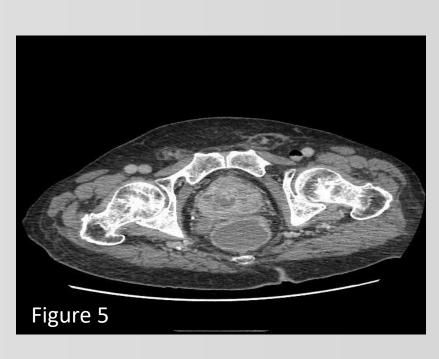




- The CT scan confirmed the diagnosis of <u>left side pulmonary embolism</u> (Figure 3), <u>Perforated Viscus</u> (Figure 4), and <u>prostate mass</u> (Figure 5).
- The patient underwent an emergency exploratory laparotomy that revealed perforated 2nd part of the duodenum.
- The patient was admitted to the surgical ICU. His hospital course was uneventful and he was discharged home on day 15.



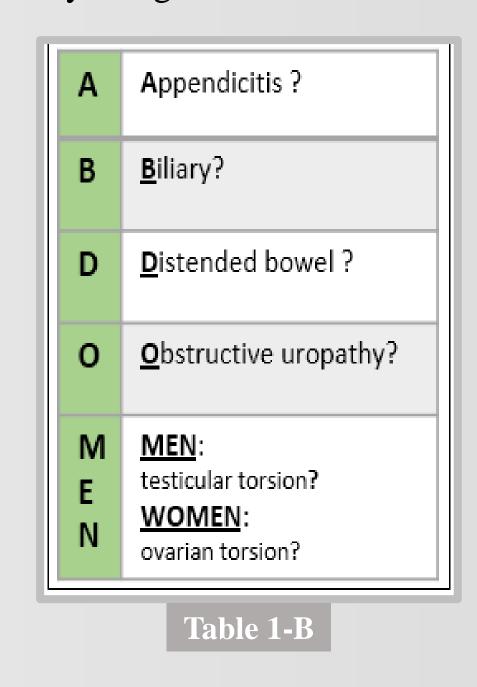




Discussion:

- The use of point of care ultrasound (POCUS) is becoming widely established as standard of care within Emergency and Intensive Care Departments. It is a safe, non-invasive tool, used as an extension of to the clinical examination; which can help answer focused questions and rule in/out life-threatening diagnoses rapidly.
- LOW BP and ACUTE ABDOMEN both are new mnemonics, specially designed to address critical emergency approach of ABC (airway, breathing then circulation)

Α	<u>A</u> AA ?
С	<u>C</u> ollapsed IVC ?
U	<u>U</u> lcer(Perforated viscus) Pneumoperitoneum
Т	<u>T</u> rauma ? FAST, FAFF
E	E ctopic Pregnancy ?
Table 1-A	



L	L ung ? pneumothorax Acute pulmonary edema
0	Cardiac <u>O</u> utput ? Heart failure , dilated RV , pericardial effusion
W	<u>W</u> ater ? IVC scan
В	B lood ? FAST, AAA, pleural space
Р	P ipe , P regnancy ? DVT , ectopic pregnancy
Table 2	

Conclusion:

- POCUS played an important role in the decision making and management of this patient.
- Having an algorithmic approach "ACUTE ABDOMEN", and "LOW BP" will help physicians to rule-in or out critical etiologies that can easily be missed.





