

Patients and methods: The study design is a multicentric prospective cohort, including six EDs in Piedmont, Italy, with a six months recruitment period in each center. The study will recruit 1,000 patients. Adult patients with acute dyspnoea are considered eligible. After the initial diagnostic work-up, the dyspnoea is classified as cardiogenic or respiratory. At this point, LUS and then a chest X-ray are performed. The entire medical records are independently reviewed by a panel of expert physicians blinded to the LUS results, in order to determine if the patient's dyspnoea on presentation was related to heart failure or respiratory disease.

Results: From October 1st, 2010 to March 30th, 2011, 120 patients were enrolled at AOU San Giovanni Battista in Turin and "E. Agnelli" General Hospital in Pinerolo. The median age was 77 years (range 34–99 years). Clinical evaluation had a sensitivity of 91.2% (CI 81.8–96.7) and a specificity of 82.7% (CI 69.7–91.8) for the diagnosis of cardiogenic dyspnoea, with a positive predictive value of 87.3% (CI 77.3–94) and a negative predictive value of 87.8% (CI 75.2–95.4). LUS had a sensitivity of 97.1% (CI 89.8–99.6), a specificity of 92.3% (CI 81.5–97.9), a positive predictive value of 94.3% (CI 86–98.4), and a negative predictive value of 86% (CI 86.3–99.5). **Conclusions:** The preliminary results of our study showed a high LUS diagnostic accuracy for the diagnosis of cardiogenic dyspnoea patients admitted to EDs. At the end of enrolment (expected in February, 2012), we will be able to estimate the diagnostic accuracy of LUS in a significantly larger sample of patients.

SYMPTOMATIC UNDIFFERENTIATED HYPOTENSION IN EMERGENCY: THE DIAGNOSTIC USEFULNESS OF A FOCUSED MULTI-ORGAN ULTRASOUND ASSESSMENT

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Background: Symptomatic undifferentiated hypotension represents a negative prognostic factor and the strongest predictor of in-hospital mortality. In 76% of cases undifferentiated hypotension remains without any initial diagnostic explanation [1–3]. Misdiagnosis may lead to delayed or incorrect treatment of some life-threatening conditions. The aim of our study is to evaluate the feasibility and accuracy of a new bedside ultrasound method that consists in the focused study of the thorax, abdomen and leg veins, in emergency. **Materials and methods:** We prospectively studied hypotensive (<100 mmHg) patients presenting to our emergency department, complaining of at least one of the neurologic, respiratory and cutaneous signs and symptoms of inadequate tissue perfusion. Trauma victims or patients with a clear origin of the condition were excluded. During the first evaluation, each patient was submitted to a focused assessment of the heart, lungs, inferior vena cava, peritoneum, aorta and leg deep veins. On the basis of physical examination and sonography, the operator declared the diagnostic hypothesis without influencing the attending physician and the following diagnostic procedure (which included ultrasound, when needed). Diagnostic categories were assigned by using specific sonographic criteria, and were: hypovolaemia (H), distributive (D), cardiogenic (C), obstructive (OC = cardiac tamponade, OE = massive pulmonary embolism, OP = hypertensive pneumothorax), multifactorial

(M), indefinite (I). The diagnostic hypothesis was then compared with the final diagnosis, obtained after the hospital route and discussed by a panel of three experts (one radiologist, one cardiologist and one emergency physician) who considered all the available information but were blinded to the first ultrasound results. The statistical agreement was calculated by the κ of Cohen with p-value, confidence intervals and raw agreement (Ra).

Results: We enrolled 54 patients. Feasibility of the ultrasound study was 100%. The ultrasound diagnoses were as follow: H = 5, D = 17, C = 9, OC = 2, OE = 6, M = 13, I = 2. Out of 54 patients, in 8 cases agreement between the panelists was not possible, and the final diagnosis was undefined. In the remaining 46 patients, the statistic concordance between the clinical and the sonographic diagnoses varied from $\kappa = 0.776$ to $\kappa = 0.943$. The values of κ improved when the groups H and D were considered together and the multifactorial diagnoses were considered concordant if only the main diagnosis was the same.

Conclusion: Preliminary results of this study show that our multi-organ ultrasound method is reliable in the emergency evaluation of non-traumatic undifferentiated hypotension. The first focused sonographic evaluation allows prompt diagnosis and treatment of life-threatening conditions, but cannot replace a second level imaging and other routine tests in the most complicated and multifactorial diagnoses.

References

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CRITICAL ULTRASOUND APPLICATIONS ON A DOG HIT BY CAR: A CASE REPORT

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A 2 years old intact male mixed breed dog was hit by car 1 h prior to presentation. The dog was panting with some fingers wounds. Flow by oxygen was delivered, a venous access was performed for initial treatment with crystalloids solution to correct hypovolemic shock and a blood sample was collected for emergency laboratory works. A FAST ABCDE-conformed ultrasound assessment showed right pneumothorax and small amount of abdominal free fluid. Thoracocentesis was performed and 500 ml of air was collected. A secondary survey was performed, without any difference with the previous exam. A third survey showed again right pneumothorax, so another thoracocentesis was performed and 30 ml of air were obtained. Two