

Fluid challenge in spontaneous breathing unstable hypotensive patients: Can aortic Velocity Integral Time (VTI) guide fluid therapy and have prognostic value in the Emergency Department? A prospective pilot study

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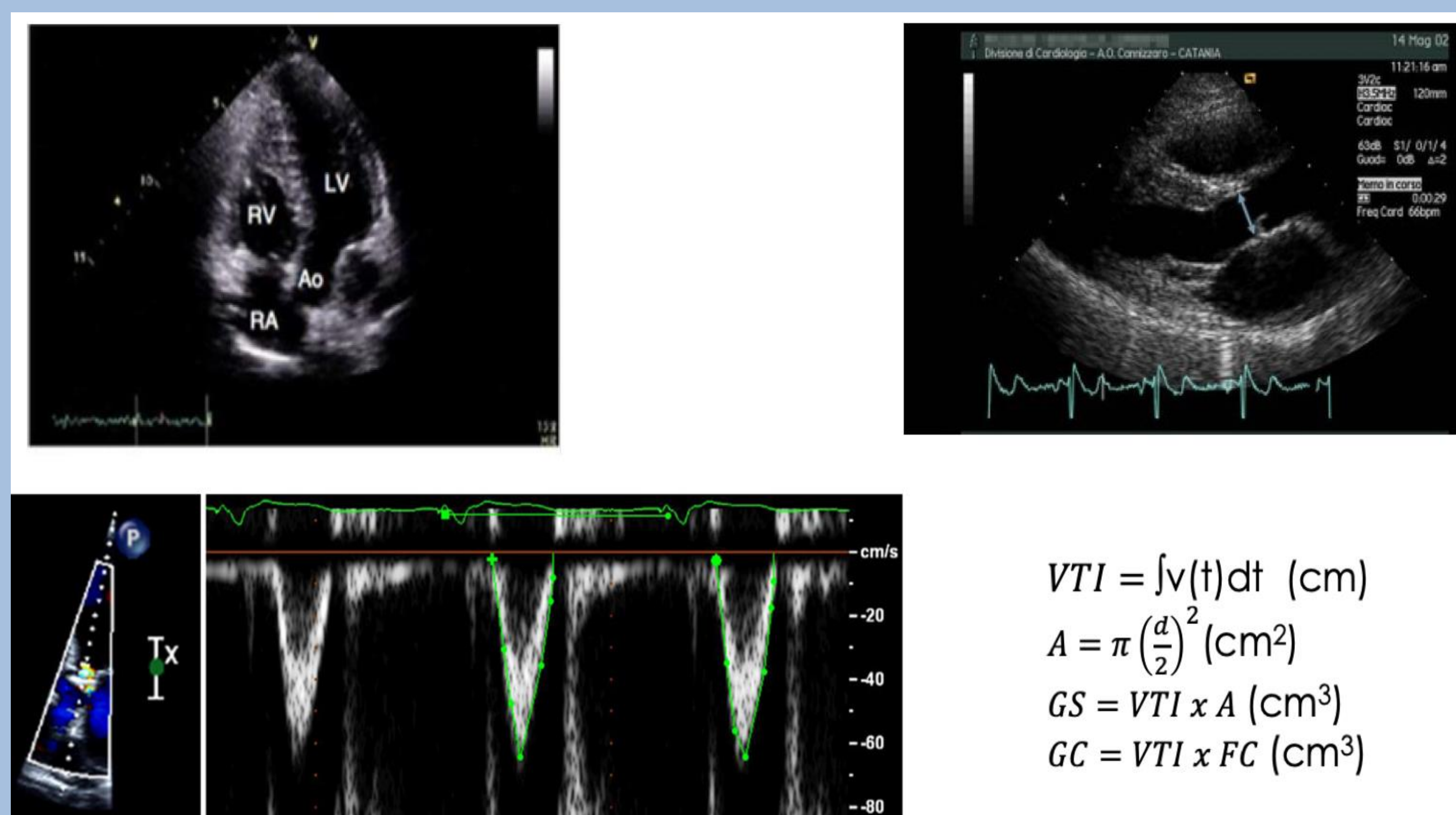
Background:

Assessing cardiac function, intravascular volume status and the responsiveness to fluid challenge (FC) in acute hypotensive patients, still remains difficult, because in this situations blood pressure value doesn't give comprehensive hemodynamic evaluation, since it includes three macro-parameters that could change quickly in acute situations: intravascular volume status, vascular tone and cardiac performance

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Methods:

We evaluated 16 patients arrived in the ED in hemodynamic instability, with MAP < 65 mmHg: all of them had indication to undergo a FC. We studied: clinical and laboratory measurements (cardiac rate, MAP and lactate); ultrasound parameters: aortic VTI, the E/E' ratio, IC index and LUS; peripheral vascular resistances and cardiac output, derivated from ultrasound measurements. Vital signs, clinical data and ultrasound measurement were taken at the beginning and after FC, consisting of 500-1000 mL of crystalloid administered in 20-30 minutes

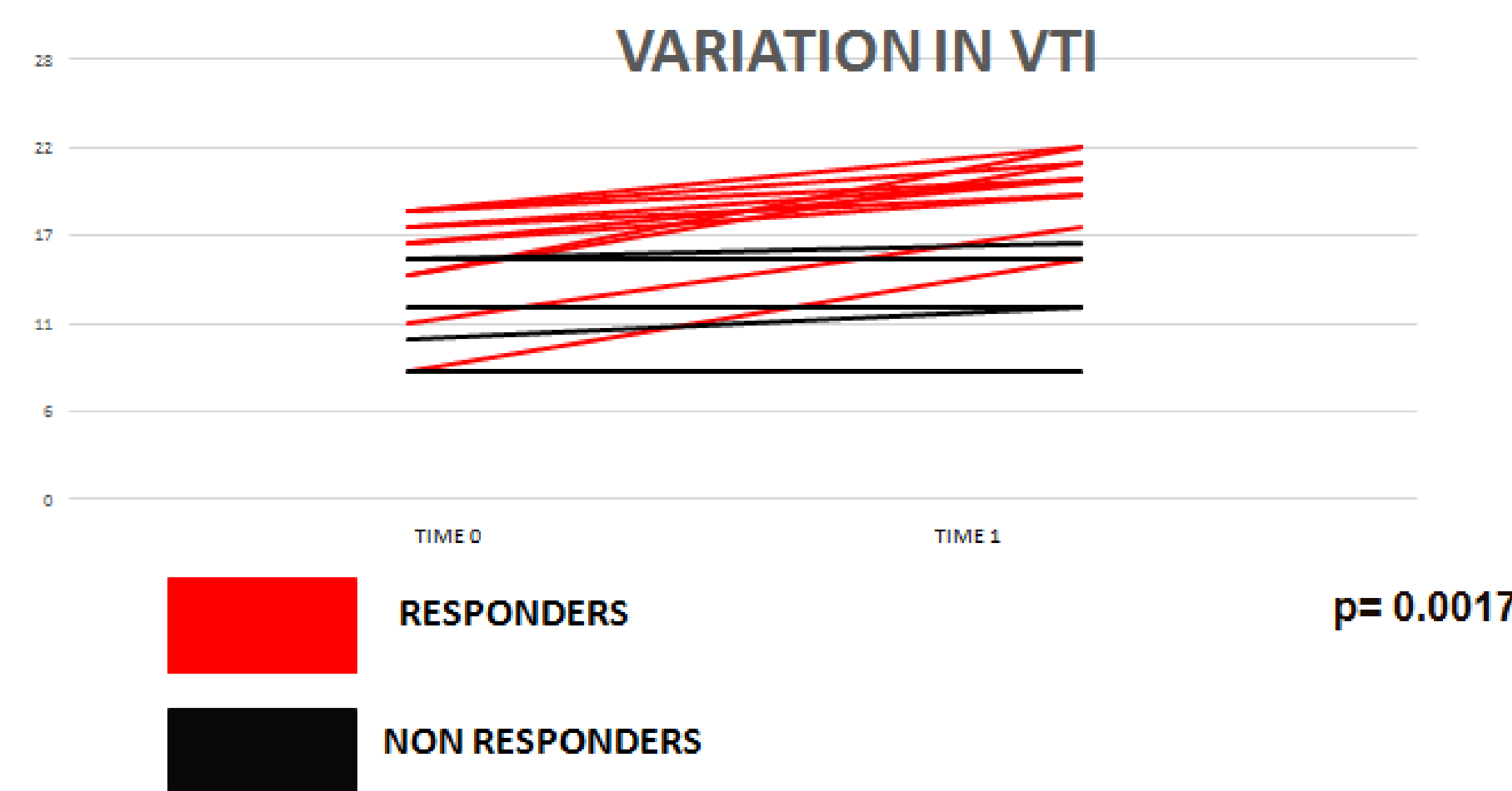
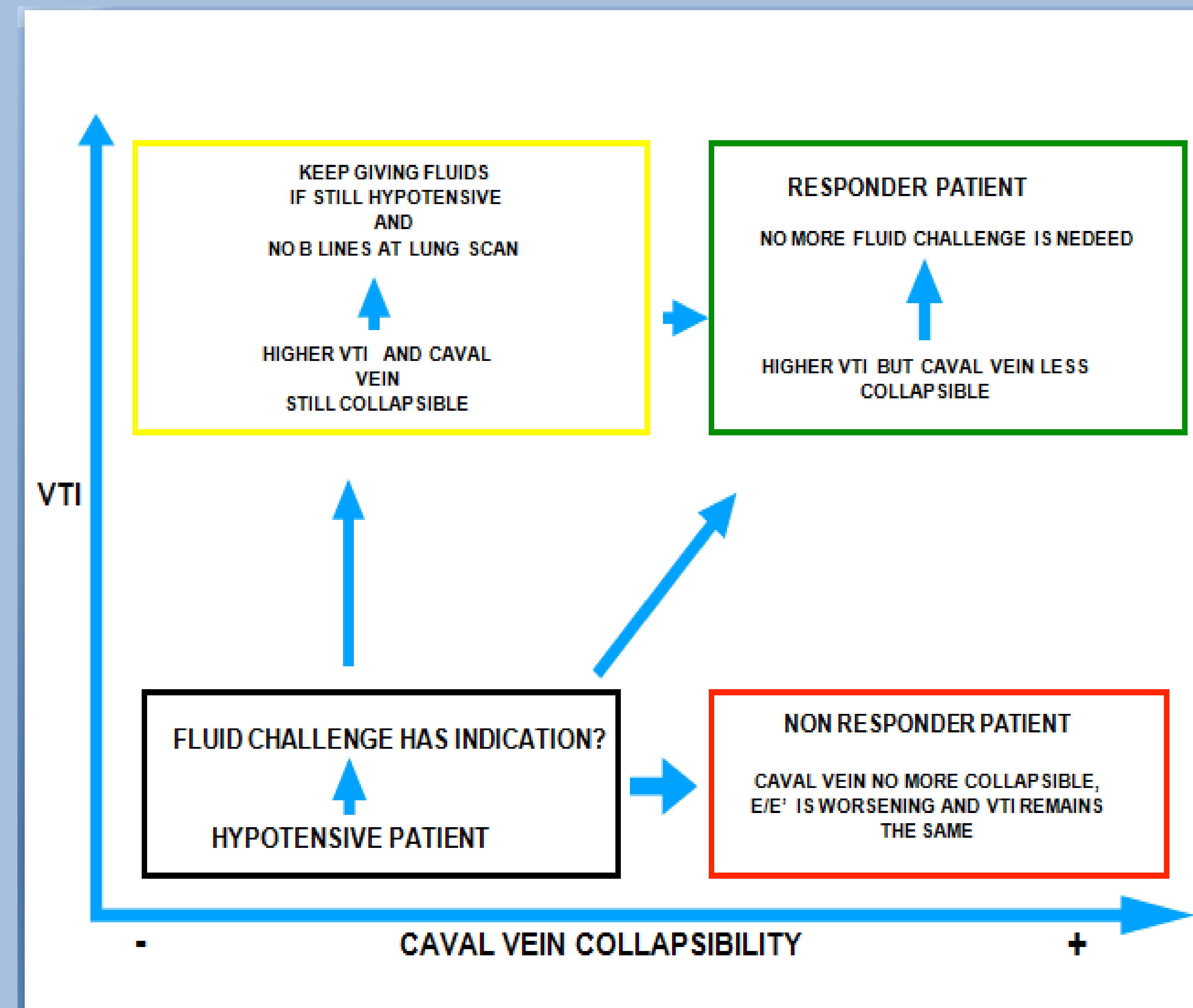


Aim:

Assessing the responsiveness to FC in hypotensive and instable patients by integrating clinical data with some ultrasound measurements: aortic velocity time integral (VTI), mitral E/E' ratio, inferior caval (IC) index and lung ultrasound (LUS).

Results:

We observed, only in the group of patients responder to FC (11/16; $p < 0.05$), a statistically significant correlation between the increase in VTI, MAP rising and lactate reduction. Mortality rate was 18% in responder patients and 60% in non responders



Conclusions: Despite the small number of patients and the known limitations of aortic VTI measurements, in acute setting aortic VTI measurements, added to clinical and others ultrasound parameters, could aid emergency physician to better discriminate between patients who could benefit from FC or not in an easy and reproducible way; it could have also a prognostic value