

# Abstract

**Background:** Tricuspid assessment using tissue Doppler technique could offer an alternative to invasive right heart catheterization in determining fluid response

**Aim of the work:** To investigate the reliability of using the Tricuspid E/Ea ratio, Inferior vena cava (IVC) collapsibility index by bedside echocardiography and Stroke volume variation (SVV) by cardiac bioimpedance for the assessment of right atrial pressure in critically ill septic patients as an alternative to invasive central venous pressure (CVP).

**Methods:** Thirty patients with severe sepsis and hypotension (Mean arterial pressure i.e.  $MAP < 65\text{mmHg}$ ), were enrolled in our study. Fluid resuscitation ( $30\text{ml/kg}$ ) was administered. Fluid response was defined as  $MAP \geq 65\text{mmHg}$ . Preload assessment was done through CVP, IVC collapsibility and tricuspid E/Ea by tissue Doppler imaging (TDI). Stroke volume variation (SVV) by ICON® was examined to assess fluid response.

**Results:** The study included 13 males (43.3%) with age  $47.8 \pm 19.7$ . Paired comparison showed significant change in MAP readings (P value  $< 0.001$ ). Right ventricular filling pressures (CVP) were correlated to tricuspid E/Ea ( $R\ 0.608$ , P value  $< 0.001$ ), and to IVC collapsibility index ( $R\ -0.495$ , P value  $0.005$ ). ROC curve showed cutoff 11.5% for SVV to predict fluid responsiveness with Area under Curve (AUC)  $0.927$ , sensitivity  $100.0\%$ , and specificity  $70.0\%$ .

**Conclusion:** Tricuspid excursion using TDI offers non-invasive evaluation of right sided heart pressures and SVV could be used to predict fluid response in critically ill patients

**Keywords:** Right Atrial Pressure, Tricuspid Excursion, Stroke Volume Variation, Fluid Response.