Non Invasive Rapid Accurate Prediction of Fluid Responsiveness In Critically Ill Septic Patient By Echocardiography .

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Abstract Introduction: *Static measures* fail *to* accurately predict fluid responsiveness(FR) in critically ill patient and have been recently replaced by dynamic parameters. Non invasive transthoracic echocardiographic (TTE) measurement of subaortic velocity time integral variations(ΔVTI) and respiratory variations of inferior vena caval diameter(ΔIVCD) are two dynamic measures to predict FR.

Aim of the work: is to test whether non invasive dynamic measurement of ΔVTI and ΔIVCD using TTE ,can predict fluid responsiveness after a mini fluid challenge.

Methodology: 40 spontaneously breathing Patients with acute circulatory failure secondary to septic shock admitted to ICU over 6 months period, TTE measures VTI by Doppler on a 5 chamber apical view, and IVCD in subcostal view in M-mode . Then 500 ml 6% Hydroxyethyl starch (HES) were infused via a specific venous line, The first 100 ml were regularly infused over 1 min. , the remaining 400 ml were infused at a constant rate over 14min.TTE reassessments were performed after the first minute and after completion of infusion.

Results: Patients were Classified into two groups, responders or non responders according to FR,

Fluid replacement remains the corner stone for resuscitation of patients with acute circulatory failure due to septic shock. Neverthless up to one half of patients of septic shock do not gain benefit from fluid therapy, moreover it can be counterproductive in many of them .

Fluid responsiveness (FR) is defined as the ability of the left ventricle to increase its stroke volume (SV) in response to fluid administration.

Static measures fail to accurately predict FR and are not recommended. In the last years, dynamic parameters of fluid responsiveness have been replaced static parameters to quantify cardiac response to variations in preload, Regardless of the method used, the dynamic parameters of preload dependency are the transient expression of cardiac output or systolic volume in response to a generally reversible and short-lasting change in cardiac preload(ie,fluid challenge).

The objective of our study is to test whether non invasive dynamic measurement of subaortic velocity time integral variations(ΔVTI) and variations of inferior vena caval diameter(ΔIVCD) using transthoracic echocardiography(TTE),can predict fluid responsiveness after a mini fluid challenge.

Keywords

Fluid responsiveness-Septic shock-Heart-lung interaction-Fluid challenge