

INTRODUCTION

Sepsis is a clinical condition defined by the body's widespread react to infection, which can result in systemic inflammation and potential organ dysfunction that has physiological, biological, and biochemical disturbances that are due to an uncontrolled host response to infection. Sepsis which subsequently results in the inflammatory response can eventually cause multiple organ dysfunction syndrome and death.

Nowadays, fluid resuscitation is seen as a crucial part of early sepsis treatment. Echocardiography is becoming regarded as the first-line monitoring method of choice in patients with hemodynamic compromise since it offers significantly more information on the etiology of shock than only Fluid ressustation. It is possible to evaluate both static and dynamic characteristics to create an image of the circulatory status.

AIM OF THE WORK

The aim of this study was to compare between left ventricular outflow tract (LVOT) velocity time integral (VTI) and inferior vena cava (IVC) distensibility in predicting fluid responsiveness in mechanically ventilated septic shock patients.

PATIENTS AND METHODS

This study was conducted on 80 Patients with septic shock admitted to Critical Care Medicine Department in Alexandria University Hospitals. Left ventricular outflow tract (LVOT) velocity time integral (VTI) was measured by echocardiography, LVOT velocity time integral and IVC distensibility index were recorded before and after fluid challenge (FC) of 500 ml of NaCl 0.9% within 15 minutes.

RESULTS

There is a significant change in the percentage of change between pre and post fluid challenge ($P < 0.001$) with a mean value of 10.88cm in non-responders ($n = 9$), and 23.83cm in responders ($n = 71$). (table 1, figure 1)

Table1: LVOT – VTI percentage of change pre and post fluid challenge in responders and non-responders.

% change of LVOT – VTI (cm)	ECHO assessment		U	p
	Non Responders (n = 9)	Responders (n = 71)		
Min. – Max.	9.09 – 11.73	11.24 – 39.39	1.00*	<0.001*
Mean ± SD.	10.88 ± 0.75	23.83 ± 6.49		
Median	11.11	22.22		

U: Mann Whitney test
p: p value for comparing between non responder and responder
*: Statistically significant at $p \leq 0.05$

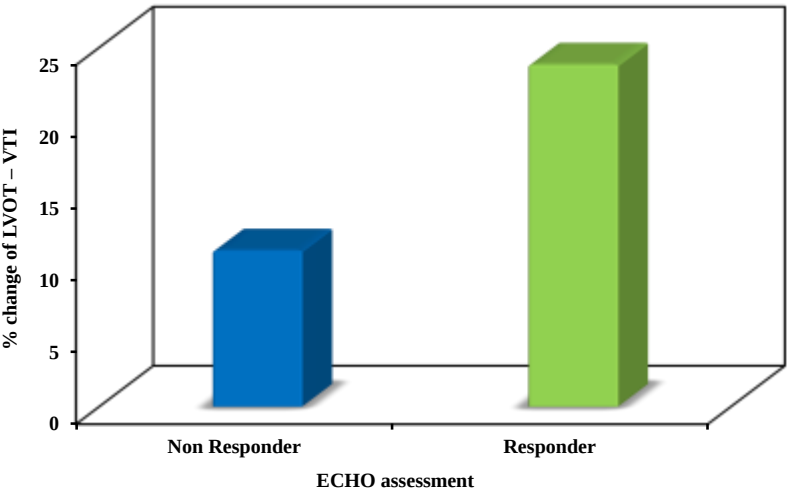


Figure: LVOT – VTI percentage of change pre and post fluid challenge in responders and non-responders

Table 2: sensitivity, specificity and accuracy for IVC dispensability.

IVC distensibility	ECHO assessment				Sensitivity	Specificity	PPV	NPV	Accuracy
	Non Responder (n = 9)		Responder (n = 71)						
	No.	%	No.	%					
<18	8	88.9	7	9.9	90.14	88.89	98.46	53.33	90.0
≥18	1	11.1	64	90.1					

PPV: Positive predictive value
NPV: Negative predictive value

CONCLUSION

- Inferior vena cava distensibility can be used as a reliable parameter as compared to left ventricular outflow tract velocity time intergral for predicting Fluid responsiveness in mechanically ventilated septic shock patients.
- Using a cut-off value of 17% or 18% for dIVC, it has sensitivity of 90.14 % and specificity of 88.89% for predicting FR in mechanically ventilated septic shock patients.