ABSTRACT

Title**: USE OF THE VENO‑ARTERIAL CARBON DIOXIDE GAP AND ARTERIO-VENOUS OXYGEN CONTENT TO GUIDE THE RESUSCITATION IN LIVER TRANSPLANTED PATIENTS.**

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Introduction:

Liver transplant (LT) has become a feasible treatment option for acute as well as chronic end stage liver disease (ESLD). Fluid responsiveness (FR) is defined as the ability of the heart to increase its stroke volume after fluid administration. Methods depending on preload challenge have the advantage of being valid in wider range of patients including those who are spontaneously breathing. Mini fluid challenge is one of the most robust methods for preload challenge, but it needs real time monitoring of cardiac output (CO), to track instantaneous change of stroke volume (SV) with fluid loading. Recently $PvaCO_2$ gap have been used to detect FR after passive leg raising test with high sensitivity and specificity. Venous-arterial carbon dioxide gap ($PvaCO_2$ gap) and which is defined by the difference between central venous and arterial CO_2, and the ratio between the gap and arterial‑venous oxygen difference are emerging tool to guide resuscitation in critically ill patients. However, to the best of our knowledge, no previous study investigated the validity of this method to detect FR in post liver transplant patient.

Aim:

Investigate the ability of $PvaCO_2$ gap and gap/ratio to predict the hemodynamic response to mini fluid test and fluid bolus in postoperative liver transplant patient with hemodynamic instability. And to compare the validity of $PvaCO_2$ gap and gap ratio of arterio venous oxygen content for prediction of FR.

Methods:

We included 40 patients post liver transplantation with hemodynamic instability, elevated lactate and normal $scvo_2$. $Pvaco_2$ gap calculated to detect FR .Fluid responders were defined as patients with increased stroke volume 15 %(measured by icon cardiometry device) after fluid bolus. In addition to demographic and hemodynamic data, arterial and central venous blood gases were obtained before and after fluid bolus. The predictive ability of the change in $Pvaco_2$ gap and for the change in ratio index with fluid bolus to predict FR was obtained with area under receiver operating characteristic (AUROC) curve.

Results:

Fluid responders were 26 patients (65%), AUC of $Pvaco_2$ for prediction of FR; After mini fluid test showed sensitivity91.6% and specificity25% , AUC 0.51, 95% CI (0.35-0.67) , P value 0.89 and after fluid bolus showed sensitivity70.8% and specificity62.5%, AUC 0.65, 95%CI (0.48-0.79), P value 0.08.$Scvo_2$ couldn't predict fluid responder patients post liver transplantation post mini fluid test with sensitivity 20% and specificity 40%, AUC 0.51, 95% CI (-0.13, 0.14).and after fluid bolus with sensitivity 20%and specificity 45%, AUC 0.55,95% CI (-.007, 0.15)

Conclusion:

Interpretation of $Pvaco_2$ changes (or of absence of changes) must be particularly cautious. The changes in $Pvaco_2$ gap, Ratio index should not be used as guiding tools for hemodynamic management in patients with end stage liver disease post liver transplantation.

Key words:

Characteristics and Outcome of Pulmonary Hypertension in Preterm Neonates in Neonatal Intensive Care Unit of Cairo University

Pediatric Hospital