Non-invasive hemodynamic monitoring of fluid resuscitation in cirrhotic patients with acute Kidney Injury

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Abstract

Background: The management of patients with liver cirrhosis presented by acute kidney injury (AKI) is complex issue needs accurate assessment of intravascular volume status and determine the cause of AKI. The initial challenge of the clinician is not to make the diagnosis, but to recognize early renal dysfunction. The second challenge is the management of AKI in patients with liver cirrhosis and reversal of kidney injury. Echocardiography used in various hemodynamic monitoring as a rapid, easy, bedside and non- invasive tool with high accuracy. **Aim of the Study:** to assess the use of echocardiography as anon-invasive hemodynamic monitoring technique in evaluation of volume status before and after volume expansion in patients with liver cirrhosis presented by AKI. **Patients and Methods:** This cross sectional study was held at the Critical care departments of Thyodor Belharz Research Institute and included 40 patients divided into two groups: Group A included 27 patients with liver cirrhosis presented by AKI due to pre –renal azotemia and Group B included 13 patients with liver cirrhosis presented by AKI due to hepatorenal Syndrome. **Results:** We noticed that there was a statistically significant IVC collapsibility index (35-47 %) and LVOT VTI variability index (13-17.3 %) in pre-renal group reflecting fluid responsiveness in this group and by following up, the serum creatinine returned to baseline serum level after fluid resuscitation. While in HRS group there was no statistically significant change IVC collapsibility index (410 %) and LVOT VTI variability index (1-4 %) reflecting fluid unresponsiveness in this group and by follow up, there is no improvement of serum creatinine after fluid resuscitation. During the follow up, 27 patients have AKI due to pre-renal azotemia and 13 patients have AKI due to HRS with high mortality among the second group. **Conclusion:** Use of echocardiography is a good tool for hemodynamic monitoring of fluid resuscitation in cirrhotic patients with acute kidney injury. Use of echocardiography was limited the use of CVL only to patients with hemodynamic instability who needed vasoactive support. **Key words:** non-invasive hemodynamic monitoring, fluid resuscitation, cirrhosis, acute kidney injury