Poster # 29

CLINICAL UTILITY OF HTEE IN THE POST-RESUSCITATION PHASE OF TRAUMA PATIENTS RECEIVING MASSIVE TRANSFUSION PROTOCOL

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Introduction: Despite advances in trauma management and resuscitation, mortality still remains high for trauma patients with blunt or penetrating injuries presenting with massive hemorrhagic shock. At our institution, hemodynamic transesophageal echocardiography (hTEE) is being utilized as a hemodynamic monitoring tool to assess fluid responsiveness and ongoing resuscitation needs in patients who have received MTP. The purpose of this study was to demonstrate that in spite of receiving MTP, the majority of trauma patients when evaluated with continuous, real-time hTEE monitoring are initially under resuscitated (UR).

Methods: This is a retrospective study of trauma patients who received MTP and subsequent hemodynamic monitoring with Imacor hTEE (ZuraEVOZT1000) from January 2013 to December 2014. Demographics, volume status of the patient at time of hTEE probe placement, and time period to achieve optimization of the patient's resuscitation goals were analyzed. hTEE parameters that classified patients as fluid responders or under resuscitated (UR) were a superior vena cava (SVC) index >36% and a Left Ventricular End Diastolic Area (LVEDA) <10.

Results: 11 trauma patients were identified to have received both MTP and subsequent hemodynamic monitoring with an hTEE probe. The average Injury Severity Score (ISS) was 34. 7 of these patients had an Assessment of Blood Consumption Score (ABC) ≥ 2. Prior to hTEE probe placement, all 11 patients underwent some form of intervention to control homeostasis, 8 surgical and 3 arteriograms. The average time from initiation of MTP to hTEE probe placement was 14 hours. The average blood products transfused during MTP were 18 U RBCs, 14 U Plasma, 3U Platelets, and 3U Cryoprecipitate. Despite MTP resuscitation, 9 of 11 patients (88%) on initial hTEE assessment were classified as fluid responders (UR) by demonstrating an SVC index >36% and or LVEDA < 10. Only 2 of 11 patients (18%) demonstrated adequate resuscitation and were classified as fluid non-responders (euvolemic). No patient was determined to be volume overloaded. The time period from initiating hTEE monitoring and achieving a euvolemic state was broken down into three groups: 0 to 24 hours (h), 24-48 h, and 48-72 h. In the 9 of 11 patients initially identified as fluid responsive (UR): 2 obtained euvolemia in 0 to 24 h, 3 in 24-48 h, and 4 in 48-72 h. The longer it took for a patient to become adequately resuscitated seemed most related to the severity of the patient's injuries and the need for additional interventions. Also, an initial hTEE classification as a fluid non-responder did not translate into a patient remaining in that category. Of the two patients who were initially identified as euvolemic, one patient became volume overloaded in 24-48 h and the other patient transitioned back to a fluid responder (UR) in 0 to 24 h.

Conclusion: In patients having undergone MTP, initial hTEE assessment demonstrated that 88% of our patients classified as fluid responders (UR), despite high volume resuscitation. hTEE is beneficial in MTP as it allows for quick identification of patients in need of ongoing resuscitation as well as early recognition of patients that could benefit from a more restrictive resuscitation approach. Moving forward, incorporation of hTEE monitoring upon initiation of MTP rather than upon its completion would be beneficial to examine if hTEE influences the blood component requirements and MTP outcomes.