475657 - VALIDATION OF A RISK INDEX FOR MASSIVE TRANSFUSION IN LIVER TRANSPLANTATION

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Introduction: Massive blood transfusion (MBT), a common occurrence in liver transplantation, can be predicted using 7 readily available predictor variables: age, hemoglobin concentration (Hb), INR, platelet count, creatinine, albumin, and repeat transplantation 1. When tested on the group of transplants from which the model was derived the clinical prediction score performs well with a sensitivity of 58%, specificity of 87%, positive predictive value (PPV) of 76% and a negative predictive value (NPV) of 73%. Since the development of this clinical prediction rule, there have been several important changes in the surgical and anesthetic management of liver transplants and the objective of this work was to validate the clinical prediction score for MBT using the most recent liver transplantations.

Methods: Following institutional ethics approval data were retrospectively collected on liver transplants carried out in an academic institution between Jan. 1998 and March 2004 (Derivation Set) and March 2004 and July 2007 (Validation Set). Variables collected included: patient demographics, etiology of liver failure, comorbidities, preoperative blood work (CBC, PTT, INR, liver and kidney function studies) and surgical variables (source transplant organ, and antifibrinolytic use). The clinical prediction score assigned a single point for the following predictor variables: Age > 40 years, INR > 1.2, Hb < 100 g/L, platelet count < 70 x 10⁹/L, creatinine > 110 mM for females and > 120 for males, albumin < 28 g/L and repeat transplantation. For INR > 2.0, 2 points were assigned. High risk of MBT was considered for subjects with assigned a score of 3. MBT was defined as 6 units of red blood cell concentrate (RBCC) in the first 24 hours of surgery.

Results: There were 464 and 356 patients in the derivation and validation set respectively. The two groups were similar with regard to patient demographics and preoperative blood work. In the validation set more patients received a live-donor transplantation (28% vs. 16%, p= 0.0001) and an intraoperative infusion of tranexamic acid (1 vs. 59%, p = 0.0001). In the incidence of MBT was decreased in the validation set compared to the derivation set (35% vs. 43.3%, P= 0.0155). The clinical prediction score had a sensitivity = 55.3, specificity = 80% , PPV = 59.7% and NPV = 77.3%.

Discussion: The clinical prediction score for MBT continues to perform well despite changes in the perioperative management of liver transplantation patients. A reduction in the PPV was anticipated due to a decrease in the incidence of MBT.

References: None