

## Risk factors and outcomes in critically ill patients presenting with Gastrointestinal Hemorrhage complicated by Myocardial Ischemia

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**Introduction:** Gastrointestinal hemorrhage (GIB) is frequently associated with significant cardiovascular stress due to the resulting imbalance between myocardial oxygen supply and demand. The aim of this study is to determine the risk factors, clinical predictors, and prognostic significance of myocardial ischemia in patients admitted to our intensive care unit (ICU) with GIB.

**Methods:** This is a retrospective review of our ICU database and electronic medical record (EMR) of all patients admitted to the ICU with GIB (including upper or lower GIB) between 10/1/05 and 9/30/18. Data aggregated include demographics, hemoglobin and troponin (TROP) values, comorbidities, ICU length of stay (LOS) and outcome parameters including in-hospital mortality. Patients were categorized as having myocardial ischemia ("ISCH," including ST elevation myocardial infarction, non-ST elevation myocardial infarction, or demand ischemia), or no ischemia ("NON"). We compared risk factors and clinical characteristics of patients with and without ISCH and created

a multivariable logistic regression model to determine the independent association of ISCH with mortality.

**Results:** This investigation includes 403 patients with GIB; 256 had serial TROP values. 155 of 403 (38.5%) had enzymatic and/or electrocardiographic evidence of ischemia. ISCH had longer ICU LOS (1.7 [1.0-3.2] vs. 1.3 [0.8-2.0] days;  $p = 0.0001$ ) and higher mortality (20.0% vs. 5.6%;  $p < 0.0001$ ). Multivariable analysis demonstrated that ISCH was independently associated with higher mortality: Odds ratio (95% confidence interval) 3.23 (1.34-7.78;  $p = 0.0088$ ).

**Conclusion:** Patients admitted to the ICU with GIB are at a high risk of developing myocardial ischemia which is identified in this investigation as being an independent risk factor for mortality. Recognition of associated risk factors and comorbidities in the setting of GIB can identify patients who are at increased risk of cardiovascular stress and could aid in targeting more aggressive treatment, potentially improving outcomes.

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