# ABSTRACT

**Background:** Fibrinogen plays an important role in hemostasis and is the first coagulation factor to reach critical levels in massively bleeding trauma patients. rapid estimation of plasma fibrinogen (FIB) is essential upon emergency room (ER) admission, but is not part of routine coagulation monitoring in many centers. We investigated the predictive ability of the laboratory parameters hemoglobin (Hb) and base excess (BE) upon admission, as well as the Injury Severity Score (ISS), to estimate FIB in major trauma patients also to predict mortality and morbidity in relation to these factors.

**Methods**: In this prospective observational study, major trauma patients with documented FIB analysis upon ER admission were eligible for inclusion. FIB was correlated with Hb, BE and ISS, alone and in combination, using regression-analysis.

**Results:** A total of 80 critically ill trauma patients and 20 case control group were enrolled. FIB upon admission correlated strongly with Hb, BE and ISS. Multiple regression analysis showed that Hb , BE and ISS predicted FIB . using this equation model

Estimated log Fibrinogen = 3.188+0.243HB - 0.019HB2 + 0.019BE - 0.05 ISS +0.0002 ISS2  we also predicted Cut off value for fibrinogen to predict survival: Fibrinogen level at 222.5 was predictive for survival with AUC, with sensitivity of 67.3% and specificity of 78% as p value was 0.0001. ISS group (5) had shown a significant higher frequency of all types of complications. By comparing the 3 ISS groups for age, hemodynamic, laboratory variables Critical group (ISS5) had a significantly lower SBP, PH, Hb, GCS and higher HR, RR, BE, INR, APACHE II and length of stay

**Conclusions:** Upon ER admission, FIB of major trauma patients shows strong correlation with rapidly obtainable, routine laboratory parameters such as Hb and BE. These two parameters might provide an insightful and rapid tool to identify major trauma patients at risk of acquired hypofibrinogenemia. Early calculation of ISS could further increase the ability to predict FIB in these patients. We propose that FIB can be estimated during the initial phase of trauma care based on bedside tests.

**Keywords:** Trauma, DIC, TIC, Fibrinogen.