Prospective Evaluation of a Goal-Directed Haemostatic Therapy Protocol for Neurotrauma

Schorer Raoul, Garofano Najia, Pavlovic Gordana, Licker Marc
Department of Anesthesiology, University Hospital of Geneva, Switzerland

HUG Hôpitaux Universitaires Genève

Introduction

Intracranial or neuraxial bleeding lead to catastrophic consequences. Hemostatic treatment is therefore paramount. We evaluated a **goal-directed protocol for hemostatic treatment** in trauma cases by **comparing the predictive power of thromboelastometry (TEM) vs. standard coagulation tests (CTs)**.

Methods

➢ Monocentric **prospective** cohort
➢ Outcomes were numbers of **PRBC units transfused**, and CTs obtained on the first postoperative day (POD1)
➢ Inclusion criteria **emergency surgery >60 min**, and **head injury or multiple trauma including head or spine** with Glasgow Coma Scale **(GCS) < 13**.
➢ CTs and TEM performed on admission and POD1.
➢ **TEM** used intraoperatively to **guide hemostatic treatment**.
   High-bleeder and low-bleeder groups defined (**≥ 5 PRBC units cutoff**).
➢ TEM and Cts indices built by predictor summation, and used in regression.
➢ Coagulation analyzed through linear regression, bleeding prediction used a Poisson model.
➢ Logistic regression based on the transfusion cutoff.
➢ Mean square error and residual deviance used as indices of prediction power.

Results

➢ **21** high bleeders and **71** low bleeders
➢ PRBC units transfused: **median 2** (IQR, 0-4). **25 patients not transfused**.
➢ **Both TEM and CTs associated with transfusion** ($p < 0.01$).
➢ **TEM results were the best predictor of the need for transfusion**
➢ Prediction for bleeding: nonsignificant trend ($p = 0.0506$) **in favor of TEM** (figure 1).
➢ **MCF** and **A15** values were the best TEM predictors for both outcomes.
➢ Neither TEM nor initial CTs associated with perioperative death, complications, or postoperative bronchopneumonia.

TEM Bleeder Status classifier (cutoff 5 PRBC units)

AUC: 72.7% (58.5%–86.9%)
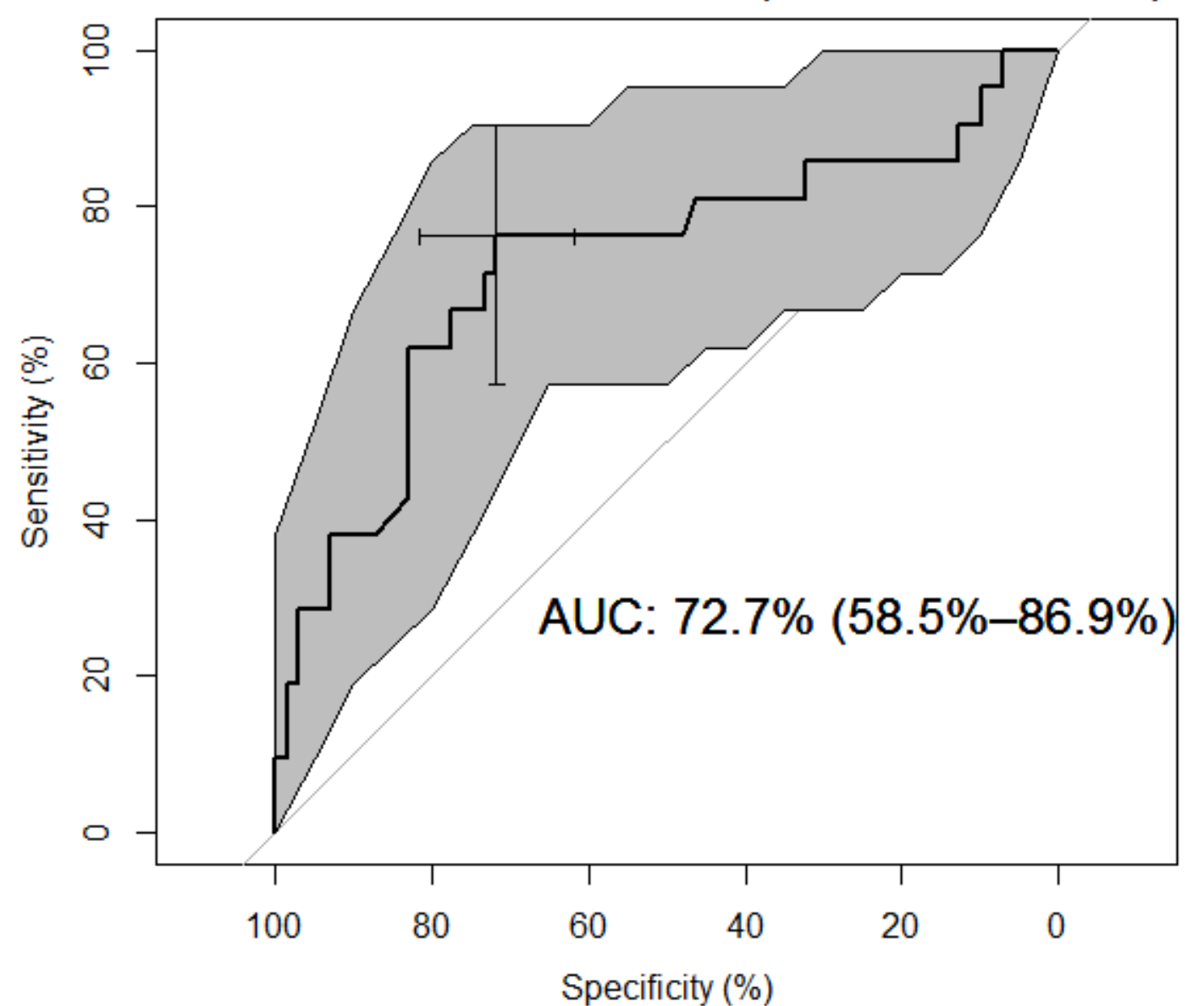
Conclusion

Our study suggests that **TEM can be used for bleeding risk stratification.** More trials using TEM-based goal-directed therapy will be required to evaluate its impact on postoperative outcomes.