Letter to the Editor

FIPS score: Solid but we still need even better!

To the Editor:

Bettinger and colleagues recently described a new score, the Freiburg index of post-TIPS survival (FIPS), which they developed to stratify mortality risk and identify good candidates for transjugular intrahepatic portosystemic shunt (TIPS) implantation.\(^1\) The FIPS score, a linear predictor composed of albumin, creatinine, bilirubin and age, showed good prognostic performances to predict 3 month (M3) and 6-month (M6) post-TIPS survival and the threshold of \(>0.92\) (85\% percentile of their derivation cohort) was defined as the cut-off for high-risk patients before TIPS implantation.

We aimed to validate this linear predictor in the Toulouse cohort as a prognostic score of post-TIPS survival. The patients with cirrhosis in whom a TIPS had been implanted between 2006 and 2020, except those treated for acute refractory bleeding or before abdominal surgery, were included. Clinical and biological data were collected before TIPS and patients were followed for at least 1 year. Statistical analyses were performed with STATA\(^\text{®}\) 17.0 statistical software (Statacorp College Station, TX, USA).

Two hundred and seventy-seven patients were included (mean age 57 ± 9 years, 73\% males, alcoholic etiology 76\%). TIPS indication was refractory ascites (\(n = 160\)), preemptive TIPS (\(n = 26\)), secondary prophylaxis of variceal bleeding (\(n = 81\)), refractory hydrothorax (\(n = 10\)). Mean model for end-stage liver disease (MELD) and Child-Pugh scores were 12 ± 4 and 8 ± 2, respectively (main characteristics of the patients are listed in Table S1). The mean score (linear predictor) was -0.37 in our cohort compared to -0.12 in the German one, which implies our population was at lower risk, mostly because patients had already been selected as good candidates for TIPS in our tertiary care center, using Child-Pugh, MELD and bilirubin-platelet scores.\(^2\)

In our cohort, we estimated that the regression coefficient on the linear predictor from the Cox model (calibration slope) was 1.104 (95\% CI 0.596–1.612) at M6, the Harrell’s \(C\) index was 0.736 (95\% CI 0.649–0.823) and the Gönen and Heller’s \(K\) index 0.713. Those 3 analyses argue for a fair prognostic performance of the score. Nevertheless, the R-squared value (\(R^2\) from Royston and Sauerbrei) was 0.306, which means only 31\% of the observations’ variability was explained by the model’s variables.\(^3\)

Two hundred and sixty-five of our patients were considered at low risk (FIPS score <0.92) and 12 at high risk (FIPS score ≥0.92). Three high-risk patients died within 3 months, and 4 within 6 months. Using the threshold of 0.92, sensitivity, specificity, positive (PPV) and negative (NPV) predictive values were 17\%, 97\%, 25\% and 94\% at 3 months, and 12\%, 97\%, 33\% and 89\% at 6 months, respectively. Survival in our cohort was significantly different between high-risk patients and the others (\(p = 0.004\) at 3 months, \(p = 0.010\) for the Log-Rank test comparing Kaplan-Meier survival curves at 6 months).

Besides, for any specific patient evaluated for TIPS, survival probability would be calculated with the formula given by Bettinger et al.: overall survival probability at time \(t\) = \(S_0(t)^{exp(FIPS+0.12)}\) with \(S_0(t) = 0.87\) at M3 and = 0.81 at M6. Fig. 1 shows mean predicted survival probability and observed survival probability in each quintile of predicted probability. Curves appear quite superimposable. Accordingly, the Freiburg score appears to be useful (with satisfying discrimination), but its sensitivity for identifying patients who will die remains poor. Research on new predictive markers that may further improve the discrimination of this prediction tool are still welcome. Besides, differences in absolute mortality rate between the German cohort in which the score was developed and other populations in which the score could be applied could have affected the performance of the model. Calibration of the score to different cohorts in which the score could be applied and other populations in which the score could be applied could have affected the performance of the model. Calibration of the score to different absolute mortality rates may address this problem and enable the effective use of the score in any group of potential candidates for TIPS.

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Conflict of interest

Christophe Bureau declares honoraria from Gore Inc (support for attending congress and speaker).

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Authors' contributions
Hélène Larrue: collection of data and writing; Clara Brusq statistical analysis; Vanina Bongard: statistical analysis and critical review of the manuscript; Jean Pierre Vinel: statistical analysis and critical review of the manuscript; Christophe Bureau: scientific content and critical review of the manuscript.

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References


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