PIRO, Mannheim Peritonitis Index and Peritonitis Sepsis Score predict mortality in surgical critical patients with complicated intra-abdominal infection

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BACKGROUND AND GOAL OF THE STUDY

Mannheim Peritonitis Index (MPI) and Peritonitis Sepsis Score (PSS) are surgical scores validated for risk of death estimation in patients with intra-abdominal infection (IAI). PIRO (Predisposition, Insult/Infection, Response and Organ dysfunction) is a validated model for staging severe sepsis and, also, seems to be a good predictor of mortality.

The goals of this study were: a) estimate PIRO, PSS and MPI in our critical surgical population with IAI in order to, b) evaluate if any of them predicts better the risk of mortality and, finally, c) establish a mortality percentage for every specific score value.

MATERIAL AND METHODS

A retrospective observational study was performed (from January 2015 to August 2017) in patients with IAI and intraoperative positive cultures admitted to a surgical intensive care unit (SICU) in a tertiary hospital. Demographic, clinical, microbiological, surgical variables and mortality were recorded. PIRO score, MPI and PSS were determined using parameters recorded during the first 24 hours at SICU admission.

The evaluation of prediction accuracy for each score was performed comparing, for each endpoint, ROC curves and its areas (AUC). The value of marker defined as cut-off was determined by the maximum of Youden index. The Cox proportional-Hazard ratio was performed for each score.

Figure 1. Comparison of three ROC curves in predicting of mortality

RESULTS AND DISCUSSION

A total of 129 patients were analysed with a mean (SD) age of 62 years (17,4), 61% male, 60% ASA III/IV. 45% presented generalized peritonitis and in-hospital mortality was 10%.

No differences in predictive power of mortality between PIRO, MPI and PSS were found (p-value = 0.22) (Fig. 1).

The cut-off point for PIRO, MPI and PSS was 9, 26 and 11 points respectively. PIRO score showed the best AUC value.

A statistically significant association between mortality and score raise was found to the three scores analysed: PIRO (HR= 1,78, CI 95%= (1,36-2,35); p-value 0,000), MPI (HR= 1,14, CI 95%= (1,03-1,26); p-value 0,014), PSS (HR= 1,96, CI 95%= (1,28-3); p-value 0,002).

CONCLUSIONS

The three scores evaluated are useful predictors of mortality in patients with IAI admitted to a SICU. However, it seems that PIRO model performs better, in terms of mortality risk evaluation in our study population. In addition, a specific cut-off value could be determined for the three scores. Finally, a precise mortality percentage could be associated to a specific score value and can be used either as a prognostic value or stratification tool.

Figure 2. Kaplan-Meier survival analysis for PIRO cut-off

Figure 3. Kaplan-Meier survival analysis for MPI cut-off

Figure 4. Kaplan-Meier survival analysis for PSS SCORE cut-off

REFERENCES

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