Maria Kompoti
Martha Michalia
Phyllis-Maria Clouva-Molyvdas

Predictive ability of intra-abdominal pressure for ICU mortality

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Dear Editor: Reintam et al. [1] discuss intra-abdominal hypertension (IAH) as an independent risk factor of mortality in a presumed risk population of critically ill patients. The authors use univariable logistic regression to identify risk factors for ICU mortality followed by multiple logistic regression to identify risk factors that are independently associated with ICU mortality.

In a stepwise multiple regression analysis ([1, Table 3]), it is shown that APACHE II score at admission in the ICU was a strong independent predictor of ICU mortality. IAH during the ICU period and lactate at admission displayed only borderline

association with ICU mortality (p values 0.033 and 0.034 for IAH and lactate, respectively). Consequently, areas under curves (AUCs) in receiver operating characteristic (ROC) analysis were good for APACHE II score (0.876), fair for lactate (0.771), and poor for intra-abdominal pressure (0.530) [2]. This suggests that intra-abdominal pressure alone has very low predictive ability for ICU mortality, no better than tossing a coin [2].

A more informative approach would be to assess the predictive ability of the multiple regression model for ICU mortality. First, it should be ascertained with one of the goodness-of-fit tests (e.g., Hosmer-Lemeshow test) that fitting of the model does not present serious problems. Then, a ROC curve, which is a plot of sensitivity as a function of 1–specificity, for the possible cutoffs of predicted probability by the model in regard to the binary outcome (ICU 28-day or 90-day death or survival), should be created [3].

The ROC curve of the full model would be rather more informative than ROC curves of single variables, because it summarizes predictive power for all possible values of ICU death probability, as predicted by the full model. The above approach

would more precisely estimate the predictive ability of intra-abdominal pressure for ICU mortality, adjusting for the other two independent predictors (APACHE II score and lactate).

Conflict of interest statement None.

References

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M. Kompoti · M. Michalia ·
P.-M. Clouva-Molyvdas
Intensive Care Unit, Thriassio General
Hospital of Eleusis, Athens, Greece

M. Kompoti (✉)
Vithinias 18, 17123 Nea Smirni,
Athens, Greece
e-mail: kompoti@ath.forthnet.gr
Tel.: +30-210-9318700