PROGNOSTIC VALUE OF **PRESEPSIN** IN PREDICTING ADVERSE RENAL OUTCOMES AND DEATH IN CARDIOSURGICAL PATIENTS

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INTRODUCTION and AIMS

In many clinical scenarios, biomarkers are reliable tools in evaluating morbidity and mortality risk.

Procalcitonin levels has been related to the development of postoperative complications (i.e. postoperative myocardial infarction, SIRS, and respiratory failure).

In Cardiac surgery (CS) patients higher procalcitonin levels are associated with mortality. Presepsin is a new early sepsis biomarker and is useful for stratifying mortality risk among septic patients in the in many different clinical settings. Accurate evaluation of the risk for adverse outcomes and mortality is crucial to clinical decision-making in patients submitted to a cardiovascular surgical procedure.

The main aim of this study is to assess the usefulness of Presepsin on predicting mortality and adverse complications among cardio surgical patients.

METHODS

This study was conducted over a 5-month period.

122 CS patients were enrolled.

Presepsin was dosed using the PATHFAST Immunoanalyzer system based on noncompetitive chemiluminescence enzyme immunoassay in plasma. Quantitative analysis of PCT was performed using BRAHMS PCT sensitive KRYPTOR.

Presepsin and procalcitonin concentractions were measured in the second postoperative day (POD) and their levels were evaluated versus a number of conditions and endpoints, including, kind of cardiac surgery, mortality, adverse renal outcome (defined as delta creatinine >0.3mg/dl, need for RRT or worsening of CKD stage any time from admission to discharge) .

RESULTS

Table 1 shown demographic, preoperatory and POD biochemical parameters in CS patients.

At POD, median presepsin was 382 ng/L (IQR 245-722.25) and median procalcitonin was 0.94 µg/L (IQR 0.34-3.69). There were no statistically significant differences in presepsin values nor in procalcitonin values among the groups of patients submitted to different types of surgery (30.3% coronary surgery, 48.4% valvular procedures, 9.8% coronary + valvular procedures , 11.5% others). Extracorporeal circulation duration was not related to presepsin nor procalcitonin concentrations.

Presepsin was observed to be a better predictor of mortality than procalcitonin for in-hospital and 6 month mortality ($p<0.05$)(Fig.1). Patients with adverse renal outcome have significantly higher presepsin levels ($p<0.005$) (**Figure 1**).

Variable	Median	Interquartile range
Age (years)	67	59-75.5
Euroscore (log)	4.27	2.12-8.39
ICU stay (days)	2	2-4
In-Hospital stay (days)	8	7-10
ECC time (minutes)	114	93-152.5
X-Clamp time (minutes)	75	56.25-98.5
Preoperatory Hb (g/dL)	12.4	10.9-13.9
Preoperatory Creatinine (mg/dL)	0.86	0.75-1.03
48 hours post-surgery Hb (g/dL)	10.1	9.1-11
48 hours post-surgery Creatinine (mg/dL)	0.91	0.75-1.31
48 hours post-surgery Presepsin (ng/L)	382	245-722.25
48 hours post-surgery Procalcitonin (µg/L)	0.94	0.34-3.69

Table 1.- Demographic, preoperatory and 48 hours post operatory biochemical parameters in the studied population (n=122)

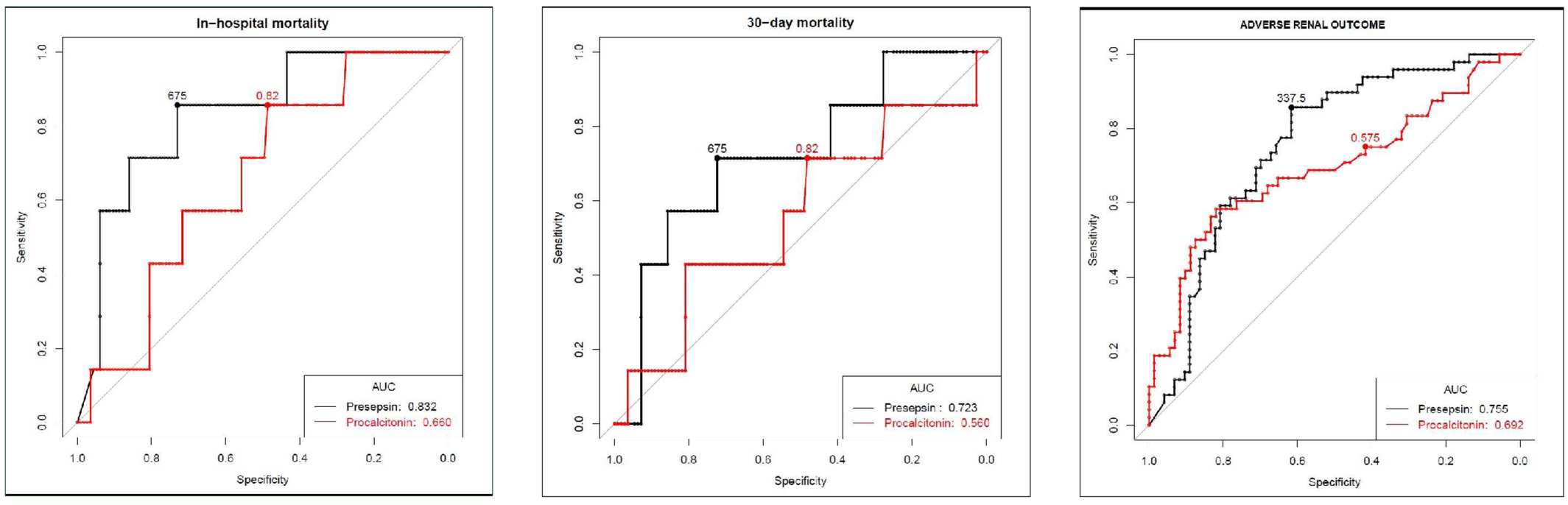

Figure 1. ROC curves for In- hospital, 30 days mortality and for adverse renal outcome for both presepsin and procalcitonin.

CONCLUSIONS

Presepsin levels correlate with the risk of death better than procalcitonin. Higher presepsin levels are associated with adverse renal outcomes. The results obtained suggest that, presepsin can have an additive value to evaluate mortality risk on patients after CS, being most reliable predictor for in hospital and six months mortality than procalcitonin.

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