The role of Pancreatic Stone Protein as an early biomarker of sepsis in Cardiac Surgery and Heart Transplantation

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BACKGROUND

Cardiac surgery and heart transplantation are conditions able to stimulate the inflammatory cascade, affecting patients'status and outcome. Early identification and appropriate management after the development of this inflammatory response improve outcomes. In recent years, several biomarkers have been studied to early identify sepsis and discriminate inflammatory conditions. We want to evaluate if Pancreatic Stone Protein (PSP) - a protein produced during early stages of the development of sepsis - can predict perioperative infection in cardiac surgery.

CASE PRESENTATION

This is a monocentric experimental study conducted in our adult cardiothoracic surgery Intensive Care Unit (ICU) at the Teaching Hospital "Policlinico di Bari" in first part of 2022. After the admission, all patients undergoing cardiac surgery were approached by a resident anaesthesiologist, their compliance with inclusion criteria [ASA < 4; age > 18] and exclusion criteria (inability or unwillingness to give informed consent, ASA > 5) was checked and the Informed Consent was obtained from all patients or their relatives. In perioperative period, baseline blood samples were taken for analysis of PSP, CRP, WBC and other routine parameters. All other data were collected in a dedicated database and evaluated using R Studio.

RESULTS

For this brief case series, we enrolled 18 patients: 3 patients who received heart transplantation, 6 patients scheduled for myocardial revascularization, 4 patients with endocarditis, 2 patients with aortic dissection and 3 patients scheduled for valve replacement. Median age of participants was 63 years (IQR 53-72), with a predominance of male patients (15/18). All laboratory data was evaluated in the study population in Figure 1.

MEAN	WBC	PCR	PCT	PRESEPSIN	IL6	PSP
PREOP	7,7744	12,8389	0,275	286	33,4	118,07
DAY1	12,2983	85,45	9,3043	1129,1	226,98	209,29
DAY4	10,2553	157,51	3,345	1202,5	25,5	264,1
DAY7	10,2911	94,6	4,33	5388,8	13,6	235,2
DAY10	9,652	273,56	1,063	2111,7		87
DIM	9,7083	66,73	0,075			108

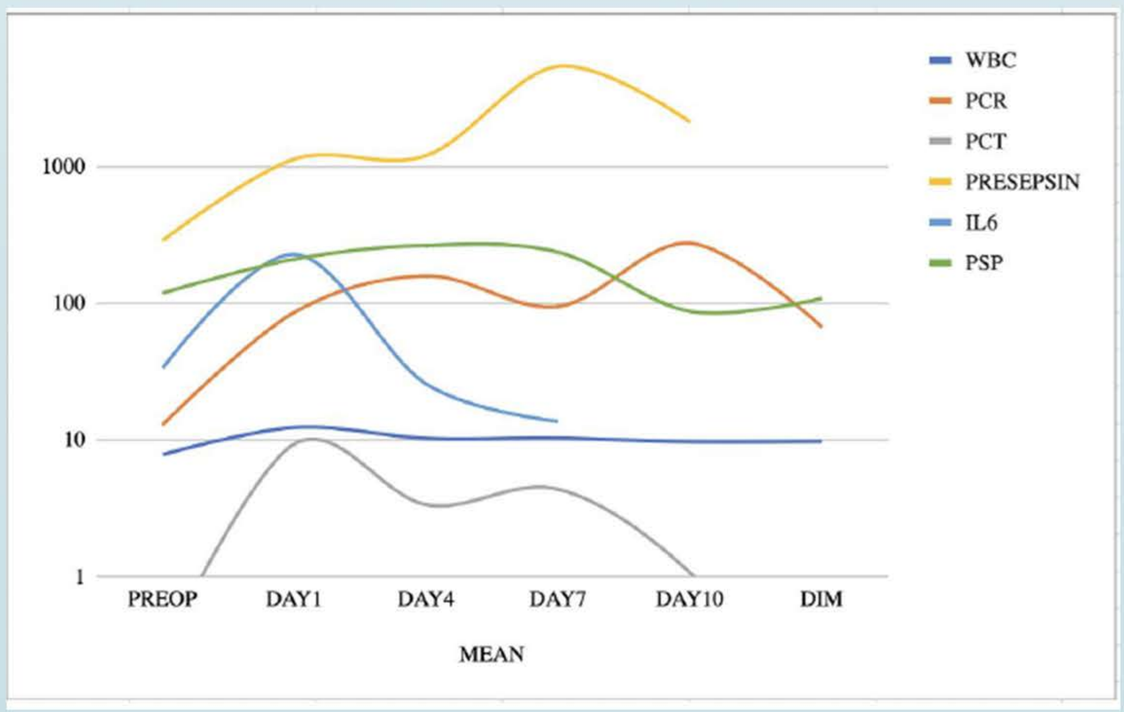

Fig.1. Laboratory Data in study population

CONCLUSION

In our brief case series, PSP early confirms the postoperative inflammatory reaction as Fig 1 shows in the comparison with WBC. The PSP confirms the trend of the other validated biomarkers but using an easily bed side point-of-care test. High level (> 200 ng/ml) were developed during important inflammatory response after cardiac surgery or for risk factor (es. back in ICU or end-stage renal disease undergoing dialysis). Further research is needed about sensibility, specify and timing, but PSP can become an early marker for postoperative sepsis.