

Critical care, emergency medicine, blood gases, POCT
M364

PRESEPSIN CAN REPLACE PROCALCITONIN IN THE PREDICTION OF SEPSIS IN TRANSPLANT PATIENTS AFTER ANTITHYMOCYTE GLOBULIN ADMINISTRATION

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BACKGROUND-AIM

Presepsin (soluble CD14 subtype, PRS) has been studied as a predictor of sepsis in ICU patients. Antithymocyte globulin (ATG) increases procalcitonin (PCT) after transplantation without any relation to SIRS or sepsis. PCT therefore completely fails as a sepsis predictor in transplant patients after the administration of ATG. The aim of our study was to test predictive value of PRS in comparison to CRP and PCT in SIRS, sepsis and posttransplant (after ATG administration) period.

METHODS

We studied 4 groups of patients: Group 1: 12 patients with SIRS during ICU stay. Group 2: 28 patients with sepsis, severe sepsis or septic shock during ICU stay. Group 3: 28 patients (22 men, 6 women) after cardiac and serious abdominal surgery (median 229 minutes, interquartile range 180 – 284 minutes) without any signs of sepsis were evaluated prospectively up to 30 days after surgery. Blood samples were taken before surgery, +3 hours, +1 day, +3 and +7 days after surgery. Group 4: 50 patients after heart transplantation (HTx). ATG was administered during HTx, samples were taken before HTx, +1 day, +3 days (PRS), +7days (CRP, PCT). Groups 1 and 2 were used for biomarker comparison in SIRS and sepsis, groups 3 and 4 for time course of biomarkers.

RESULTS

All values are given as median (interquartile range).

Group 1 (SIRS in ICU): CRP (mg/l) 148 (92 – 278), PCT (µg/l) 0,79 (0,35 – 1,46), PRS (ng/l) 1247 (795 – 1896).

Group 2 (sepsis, severe sepsis and septic shock in ICU): CRP 138 (106 – 256), PCT 2,33 (0,73 – 31,1), PRS 2265 (1152 – 5286).

Group 3 (model perioperative SIRS): CRP before 2,7 (1,3 – 6,3), +3H 5,3 (2,4 – 7,5), +1D 85,2 (67,2 – 103,2), +3D 139,2 (101,9 – 213,1), +7D 49,4 (40,1 – 113,4); PCT before 0,07 (0,05 – 0,11), +3H 0,26 (0,17 – 0,67), +1D 1,05 (0,33 – 1,70), +3D 0,40 (0,18 – 0,77), +7D 0,14 (0,08 – 0,21); PRS before 540 (393 – 658), +3H 792 (616 – 1215), +1D 897 (685 – 1292), +3D 670 (545 – 1057), +7D 590 (408 – 850).

Group 4 (HTx): CRP (mg/l) +1D 112 (67 - 154), +7D 16,7 (11,2 - 31,0), PCT (ug/l) +1D 25,0 (11,4 - 52,8), +7D 0,50 (0,30 - 1,16), PRS (ng/l) +1D 1126 (781 - 1976), +3D 780 (528 - 1394).

CONCLUSION

Procalcitonin (PCT) and presepsin (PRS) were more increased in septic than SIRS patients, CRP was unable to distinguish between SIRS and sepsis. PCT was more influenced by perioperative SIRS than PRS. PCT but not PRS was influenced by the administration of antithymocyte globulin in HTx patients. Presepsin is thus candidate biomarker of sepsis in posttransplant patients.