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MONITORING OF WEANING FROM MECHANICAL VENTILATION IN CRITICAL ILL PATIENTS BY PATHFAST PRESEPSIN AT THE INTENSIVE CARE UNIT

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BACKGROUND-AIM
The role of biomarkers is not yet established in patients who require mechanical ventilation (MV) for non-surgical acute diseases. We intended to examine the prognostic value of presepsin during weaning from MV in critical ill patients at the intensive care unit.

METHODS
Plasma samples were obtained at 4 time points (1: shortly after intubation, 2: immediately before weaning, 3: shortly after extubation, 4: before discharge to peripheral ward) in 120 patients (mean age 67.9; 77.5% males) at the intensive care unit (ICU) with non-surgical acute diseases who underwent MV. Presepsin was determined using the PATHFAST Presepsin assay. Patients were followed throughout their hospital stay until patients reached the endpoint (death) or until discharge.

RESULTS
38 (31.7%) patients died during follow-up. The presepsin levels (medians) in survivors and non-survivors were 1098 and 1609 pg/ml, respectively ($p=0.04$). 16 (13.3%) patients developed sepsis. 9 patients with sepsis died, demonstrating a significant higher mortality rate of 56.3% compared to 31.7% of the total study group ($p<0.00001$).

Presepsin differed highly significant between non-septic and septic patients (median values: 1098 (95% CI: 886-1263) and 3185 (95% CI: 1734-3904) pg/ml, respectively, $p=0.0004$). ROC analysis for discrimination between sepsis and non-sepsis revealed an AUC of 0.893 (sensitivity 85.7%, specificity 84.0%, cutoff 1965 pg/ml).

The median values of presepsin at the time points 1 to 4 during the weaning process were increasing in patients with sepsis from 3185 (IQR: 1727-3905) to 5703 (IQR: 2764-6815) pg/ml, respectively. In patients without sepsis the presepsin concentrations remained below 1600 pg/ml.

CONCLUSION

Weaning success is lower in patients with sepsis. We showed that development of sepsis during weaning from MV was associated with a higher mortality risk. Therefore it is important to identify those patients early. The new sepsis biomarker presepsin distingished patients who developed sepsis and those who did not during weaning with high diagnostic accuracy. The PATHFAST Presepsin assay allows the determination within 16 min from whole blood. Therefore this assay might be useful to monitor weaning from MV at the point-of-care in the ICU.