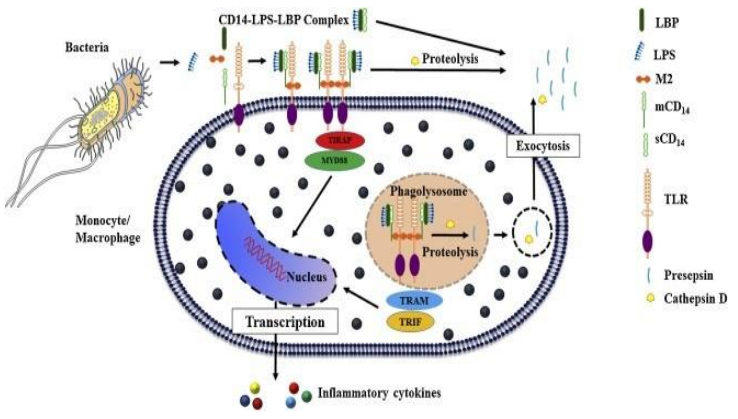
Use of presepsin for early detection of ventilator associated pneumonia in COVID-19 ARDS

S.Vathi[1], G.Bussone[2], S.Di Blasi[2], L.Giosa[1], F.Carosso[2], V.Bobbio[1], S.Mussetta[1], R.Vacchelli[2], V.Cordero[2], V.Russotto[1], P.Caironi[1].
[1]Department of Anesthesiology, Analgesia, Emergency and Intensive Care, Univeristy of Turin, Italy
[2]Department of Anesthesiology, Analgesia, Emergency and Intensive Care, AO S. Luigi Gonzaga, Orbassano, Italy

INTRODUCTION

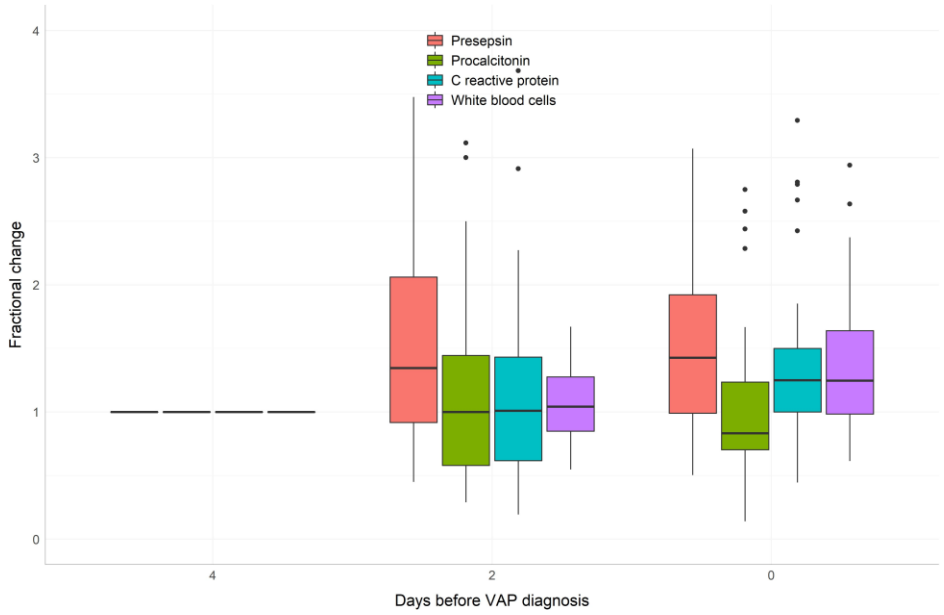
A large proportion of COVID-19 patients admitted to the ICU require invasive mechanical ventilation, with an incidence of ventilation-associated-pneumonia (VAP) ranging from 40 to 86%.[1] This is relevant, since, as suggested by the coVAPid study, in SARS-CoV-2 patients VAP is associated with worse outcome in terms of duration of mechanical ventilation, ICU stay and 28-day mortality.[2] Presepsin, a new emerging biomarker biomarker, could represent an early marker of VAP.



METHODS

This prospective, observational, single center and double blinded study enrolled all mechanically ventilated COVID-19 patients admitted to the ICU department of San Luigi Gonzaga Hospital, University of Turin, from December 2020 to September 2021. Presepsin levels were measured at admission and every 48 hours until day 30 or discharge. VAP was diagnosed according to the IDSA and American Thoracic Society guidelines, as well as in the presence of other signs of infection (fever, leukocytosis, worsening of oxygenation).

RESULTS



Fifty patients were included in the study and VAP was diagnosed in 39 (78%) patients. Respect to their baseline plasmatic concentrations (here considered 4 days prior to VAP diagnosis) presepsin showed a statistically significant increase 48h before VAP (median 36%), while common inflammation markers (PCR, PCT and WBC) did not (Figure 1). Indeed, a significant increase in these biomarkers, albeit smaller than presepsin, was only detected on the day of VAP diagnosis.

Fig 1. Presepsin, PCT, PCR, and WBC, from baseline, on days -4, -2, and 0 from VAP diagnosis.

CONCLUSIONS

Presepsin may represent a promising marker for early detection of VAP in COVID-19 patients. Its earlier increase, compared to standard inflammatory markers, may guide a more prompt initiation of antibiotic therapy which may translate in better patient's outcome.

REFERENCES

1. Rouzé A, Martin-Loeches I, Povoa P et al. Relationship between SARS-CoV-2 infection and the incidence of ventilator-associated lower respiratory tract infections: a European multicenter cohort study. Intensive Cqre Med 2021
2. Nseir, S., et al., Relationship between ventilator-associated pneumonia and mortality in COVID-19 patients: a planned ancillary analysis of the coVAPid cohort. Critical Care, 2021