



Potential role of Pancreatic Stone Protein (PSP) as early marker of bacterial infection in COVID-19 patients

Daide Morri, Antonella Potalivo, Beatrice Cappati, Sofia Domizi, Andrea Pazzini, Simona Di Giandomenico, Giovanna Fricassè, Chiara Vannini, Francesca Facondini, Giuseppe Nardi, Jonathan Montomoli

Department of Anaesthesia and Intensive Care, AUSL Romagna, Infermi Hospital, Rimini, Italy

Background

Sepsis is a life-threatening condition that needs immediate diagnosis and treatment to maximize the chances of survival. Bacterial superinfection is a severe and frequent complication among COVID-19 patients and its diagnosis is challenging. Previous reports suggested that Pancreatic Stone Protein (PSP) may be a predictive biomarker for sepsis in critically ill patients. We report a case series of three COVID-19 patients admitted to our intensive care unit (ICU) with risk of sepsis.

Methods

We daily monitored PSP, procalcitonin (PCT), and C-reactive protein (CRP) levels in three COVID-19 patients admitted to our ICU. Microbiological sampling and antibiotic treatment were performed according to the ward organization and in case of clinical suspects for infection. Positive cultures and antibiotic treatment were retrieved from clinical charts and patients were followed from ICU admission up to a maximum of 20 days.

Results

Patient 1 (male, 55 years-old, overweight, no other comorbidity) was admitted to the ICU in treatment with Ceftriaxone then interrupted on day 7. On day 2 he was intubated and piperacillin/tazobactam was started on day 12 for suspected hospital acquired pneumonia. PSP levels markedly increased on day 10 with no significant changes in CRP and PCT levels. On day 13 a positive bronchoaspirate for *Klebsiella pneumoniae* was found.

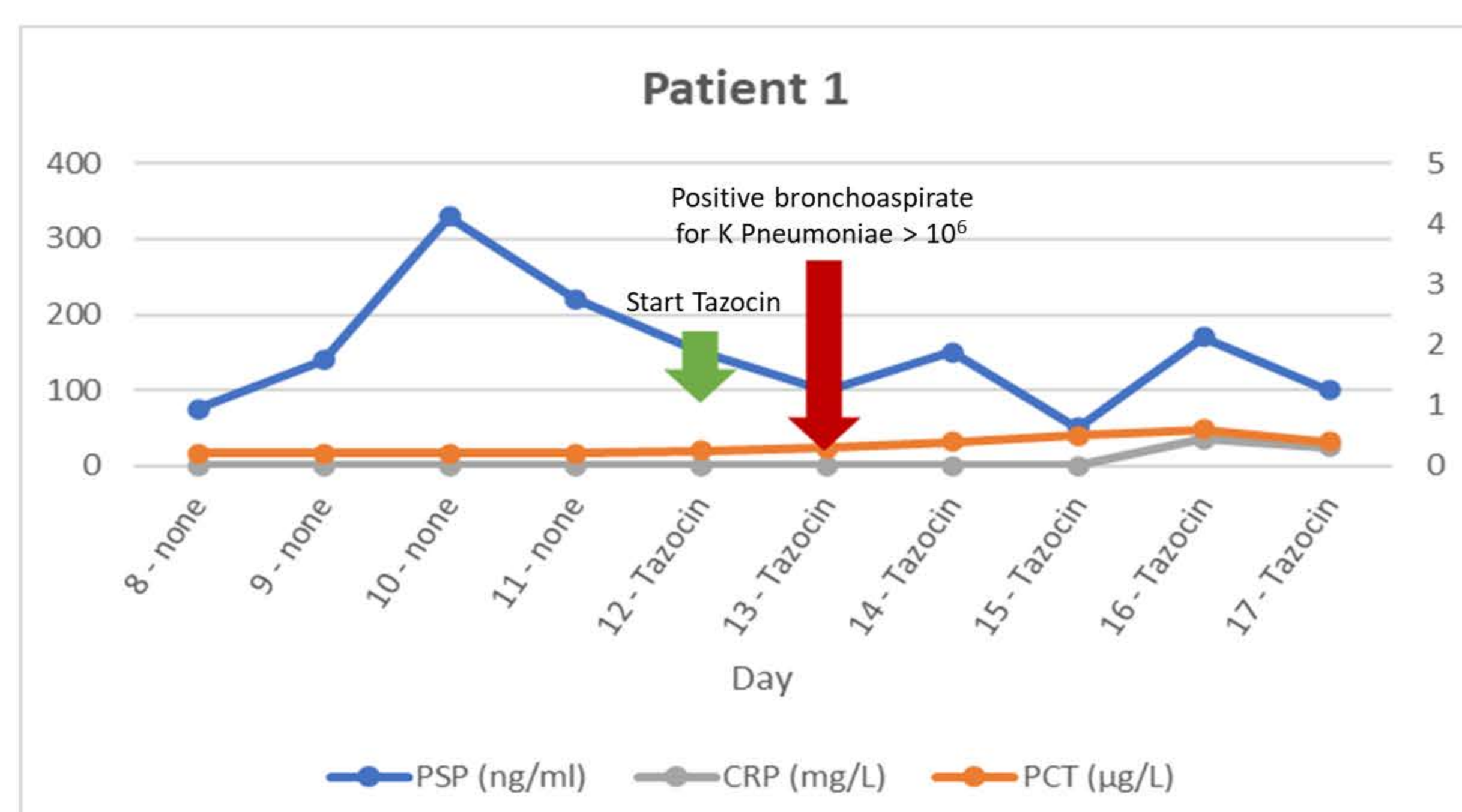
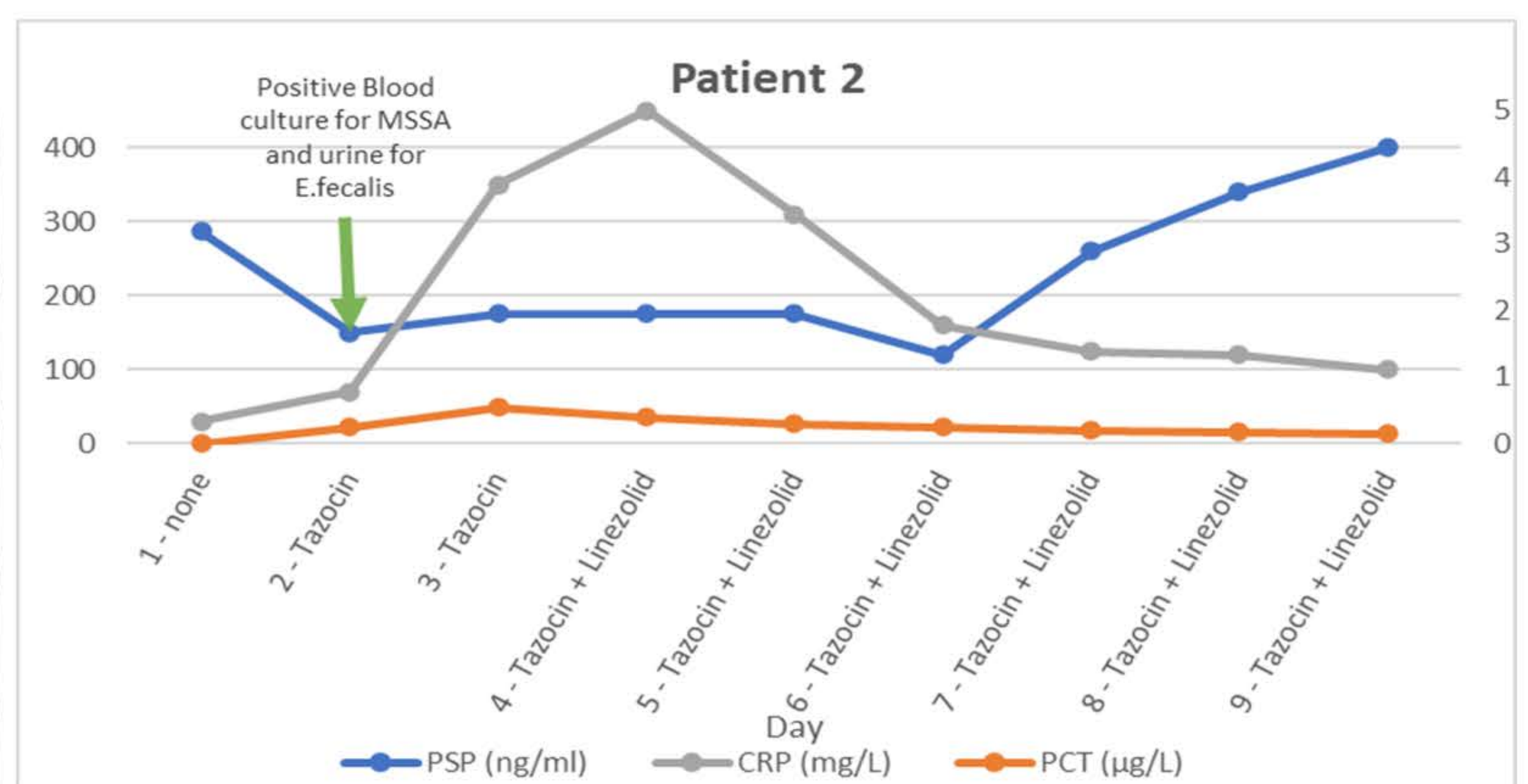
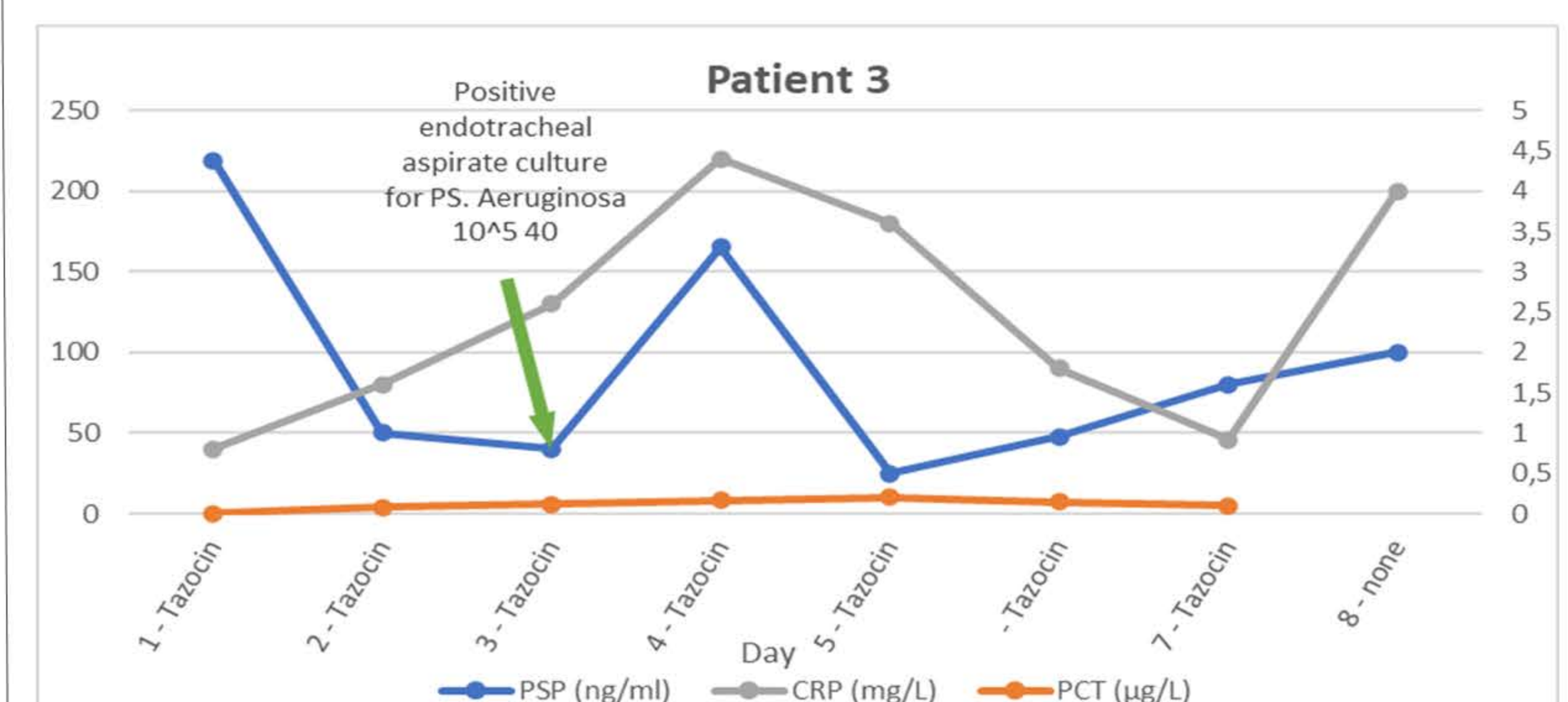


Fig. 1. PSP as a 72 hours predictor of bacterial superinfection

Similarly, patient 2 (male, 70 years-old, mild emphysema and diabetes) was admitted to ICU without antibiotic and with a PSP level of 287 ng/ml. His conditions rapidly worsened in severe septic shock requiring intubation. CRP markedly raised 48-72 hours after PSP with only mild increase of PCT.



Patient 3 (male, 78 years-old, no comorbidities) was admitted to ICU with high levels of PSP and piperacillin/tazobactam therapy was started. After 48-72 hours CRP levels increased with no significant changes of PCT. A positive bronchoaspirate for *Ps. aeruginosa* was collected on day 3.



Conclusion

Our findings suggest a potential role of PSP as early biomarker of sepsis in critically ill COVID-19 patients. Daily PSP monitoring may anticipate an appropriate treatment of COVID-19 patients with a septic complication in comparison with the actual laboratory markers. Further studies are needed to confirm our hypothesis.