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Antibiotic Decision in Severe Chronic Obstructive Pulmonary Disease Exacerbations

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We thank Giorgi-Pierfranceschi et al. [1] for their interest in our study [2]. Antibiotic decision in severe chronic obstructive pulmonary disease (COPD) exacerbations is always a dilemma, especially in critically ill patients with acute respiratory failure. Most of these patients are treated with antibiotics even if the exacerbation is due to other causes such as viral infections and air pollution. In this context, procalcitonin (PCT) may be a beneficial biomarker; however, we totally agree that the PCT level alone is not sufficient enough for the exclusion of a bacterial exacerbation, and PCT levels must be evaluated together with clinical and microbiological assessment. On the other hand, we know that COPD patients with advanced disease are one of the most vulnerable patient groups regarding the development of antibiotic resistance and colonization with resistant microorganisms. Antibiotic stewardship by monitoring of PCT kinetics is accepted as an effective approach for shorter antibiotic treatment durations with early cessation of therapy in COPD exacerbations [3]. In this respect, our results showed that 2 sequential PCT levels <0.25 ng/mL have a high negative predictive value (89%) for exacerbation of bacterial cause and, therefore, might be helpful for early termination of the antibiotics in clinically stable patients. We think that in the era of high antibiotic resistance, every intervention which leads to a shorter duration of antibiotics should be considered with utmost importance. In addition, PCT testing on the first day of intensive care unit (ICU) admission is also shown to be associated with significantly lower ICU length of stay, as well as decreased total, ICU, and pharmacy cost of care [4].

Apart from its diagnostic yield, PCT also reflects the severity of infection and high levels are associated with mortality in many infectious states such as sepsis and pneumonia. We have shown that every 1 ng/mL increase in PCT level on admission raises the risk of mortality by 1.85 in our COPD cohort. However, we also agree that PCT is far from being a perfect predictor for mortality and one important limitation of PCT are false-positive and false-negative results [5]. In addition, recent data suggest that initial PCT levels have a limited prognostic value, whereas PCT nonclearance is better for prediction of death in sepsis, but there is still need for the optimal cutoff point and the optimal definition of PCT nonclearance for accurate risk assessment [6].

In conclusion, it should be kept in mind that PCT is just a surrogate marker of bacterial infection. PCT levels must be evaluated in individual basis together with clinical and microbiological data both for diagnostic and prognostic purposes. The role of PCT during antibiotic therapy tailoring and mortality prognostication in severe COPD exacerbations requiring mechanical ventilation merits further research.

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