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Letter to the Editor

Procalcitonin is effective to stop antibiotics only in patients with less severely critical sepsis

To the Editor

We read with great interest the article published in a recent issue of *International Journal of Infectious Diseases* by Peng et al. (2019). The authors illustrated the Ineffectiveness of Procalcitonin-guided Antibiotic Therapy in Severely Critically Ill Patients by a meta-analysis of existed data.

The authors demonstrated ineffectiveness of the practice of monitoring procalcitonin (PCT) as a guide to manage antimicrobials in severe sepsis. We would like to make a few points that may be of interest to authors and readers of this article.

Meta-analysis showed that studies were homogenous (I^2 = zero), but subgroup analysis showed high heterogeneity (I^2 = 90%), for example for antimicrobials duration. What does this suggest? Could one type of heterogeneity be neutralized by another type, does it suggest different patient populations?

We noted that included studies predominantly reported antimicrobial practice in severely ill patients with sepsis without microbiologic diagnosis. Therefore, the results may be applicable only to culture negative sepsis. The impact of PCT guided practice upon opportunistic infections and antimicrobial resistance was also not addressed.

It is interesting that "lower algorithm adherence in the PCT guided group had lower short-term mortality compared with those in the standard care group"; this may be reflective of the fact that physicians not focusing on PCT may be more vigilant for other clinical variables.

The PCT guided group has decreased LOS in ICU by 2 days, although LOS in hospital was not different, suggesting that stopping antibiotics may have affected the decision to transfer the patient out of the ICU. Another recent (Rizvi et al., 2019) study also suggested a similar phenomenon, that oral Midodrine in patients with shock reduces ICU and hospital stay but increases out of hospital mortality. In this meta-analysis (Peng et al., 2019) we do not have data on post discharge mortality. A study assessing post discharge mortality should be considered.

This meta-analysis reported "lower short-term mortality in the PCT guided groups in patients with a mean SOFA score of <8". We hypothesize lower adherence in group with SOFA score >8 owing to availability of culture results, greater organ failure, longer use of antibiotics with associated renal failure or fungal infection making PCT level less reliable. Meta-regression analysis for adherence rates in these subgroups may have been helpful.

As clinicians we should consider PCT as one variable to assist in decision making, not as the guideline or protocol to start or stop antimicrobials. Clinical evaluation and microbiologic data whenever available should always be incorporated in decisions to start, stop or change the antimicrobial prescription.

Conflict of interest

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