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Early antibiotic treatment for gradual ventilator-associated pneumonia: yes or no?

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See related research by Ramirez et al. http://ccforum.biomedcentral.com/articles/10.1186/s13054-016-1342-1

We read with interest the observational study by Paula Ramirez et al. [1] discovering the appropriate starting time of antibiotic treatment in patients with ventilator-associated pneumonia (VAP).

In that study, 440 patients receiving mechanical ventilation were screened, but only patients with VAP were studied, including 43 with gradual VAP and 28 with non-gradual VAP, and they suggested that early antibiotic treatment should be applied in gradual VAP patients.

However, in clinical practice, not all patients with gradual VAP symptoms would finally progress to VAP. According to a retrospective study [2], less than 10 % of the patients with nosocomial tracheobronchitis (NTB), with similar criteria to gradual VAP, would developed subsequent VAP (Tables 3 and 4 in [2]). As it is difficult to discriminate these patients until VAP has developed, it is crucial for clinicians to know whether earlier antibiotic treatment would benefit those patients with NTB but without subsequent VAP. Besides, Nseir et al. [2] reported that antibiotic use could not decrease the VAP incidence in patients with NTB. Thus, whether early antibiotic treatment will improve clinical outcome (such as VAP rate and mortality) or will lead to deterioration of antibiotics abuse based on the low proportion who developed VAP in NTB patients remains unclear?

The other question is that, in this study, unadjusted comparisons were made between two groups. The primary result was that, compared to the VAP group, antibiotic treatment in the gradual VAP group led to a higher rate of early clinical response ($p = 0.009$). No significant difference was found in hospital length of stay or mortality. These results were similar to the former study [2]. Compared to patients with gradual VAP, non-gradual VAP may indicate stronger inflammation which we thought to be a really important confounding factor of clinical response time. Caution should be raised when we interpret this outcome.

Authors' response

Paula Ramírez and Mónica Gordón

As Dr Jiang and his colleagues expressed in their letter, there are still many unknowns regarding infectious complications in the mechanically ventilated patient.

We have focused on the study of the VAP maturation process suffered by a significant number of ventilated patients [1]. Our main conclusion is that trying to draw a diagnostic line on most of the late-onset pneumonias is only a response to an attempt to oversimplify the situation. We noted, like other authors [3], that the introduction of an appropriate treatment even in the absence of a complete diagnosis of VAP achieved an improved prognosis in our patients. Unfortunately, our study was not able to identify any tool that is able to properly guide the initiation of antibiotic treatment.

We believe that, given recent results obtained in the study of the so-called ventilator-associated tracheobronchitis as well as our own conclusions, it is necessary to shift the methodology of studies on VAP. The next clinical trials should be designed according to a dynamic scheme to evaluate the efficacy and safety of different strategies to identify the right time to start and end

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antibiotic treatment. Moreover, the chosen strategy should also be evaluated in terms of ecological sustainability (excessive selection of multi-resistant bacterial strains) [4].

In conclusion, far from solving all the unknowns mentioned by Jiang et al., our ultimate aim is to encourage experts in the field to change their approach to VAP in a more consistent way to acheiev clinical reality.

Abbreviations

NTB: Nosocomial tracheobronchitis; VAP: Ventilator-associated pneumonia

Authors' contributions

YS come up with the questions and XJ is responsible for the writing. Both authors read and approved the final manuscript.

Competing interests

The authors declare that they have no competing interests.

Consent for publication

This manuscript has been approved by all co-authors.

Ethics approval and consent to participate

None.

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