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CORRESPONDENCE

Is there a continuum between ventilator-associated tracheobronchitis and ventilator-associated pneumonia?

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Dear Editor,

We read with interest the article by Chastre and Luyt [1] on the diagnosis of ventilator-associated pneumonia (VAP), published recently in *Intensive Care Medicine*. The authors discussed a case scenario of a patient with suspected VAP, and the difference between VAP, ventilator-associated tracheobronchitis (VAT), and infectious ventilator-associated complication (IVAC). We agree that the term IVAC should not be used in this patient, since this entity is merely epidemiological and was not intended for use in the management of patients. However, we disagree with the authors' point of view regarding the futility of distinguishing between VAP and VAT.

VAT was first described in the early 2000s, as an intermediate process between lower respiratory tract colonization and VAP [2]. Several studies reported increased duration of mechanical ventilation and length of ICU stay in VAT patients compared with those with no VA-lower respiratory tract infection (LRTI). Although no significant difference was found in duration of mechanical ventilation and ICU stay between VAP and VAT patients, mortality rate was significantly higher in VAP, compared with VAT patients [3].

We agree that differentiating VAT from colonization or from VAP could be a difficult task. The use of a significant microbiological threshold (tracheal aspirate at 10^5 cfu/mL or bronchoalveolar lavage (BAL) at 10^4 cfu/mL) associated with local and systemic signs of infection could be helpful to distinguish VAT from tracheobronchial colonization. Further, in the event that a portable chest X-ray is not accurate enough in diagnosing a new infiltrate in critically ill patients, it would probably allow one to differentiate severe (VAP) from less severe (VAT) VA-LRTI. Therefore, one could argue that the presence of a new infiltrate on chest X-ray, associated with clinical and biological signs of infection, should be considered as a severity sign that might trigger prompt empirical antibiotic treatment.

There are at least four reasons to suggest a continuum between VAT and VAP. First the higher rates of VAP in patients with VAT compared with those with no VAT. Second, histological findings of postmortem animal and human studies clearly showed the coexistence of these two infections, and described them as bronchopneumonia. Third, the higher SOFA, CPIS, PCT levels, and mortality in VAP compared with VAT patients strongly suggest that VAT might be a precursor of VAP. Fourth, the pathophysiology of VAP also supports this hypothesis, as microaspiration of contaminated oropharyngeal secretions is a permanent phenomenon, lesions with different severity might exist in the lower respiratory airway of mechanically ventilated patients. However, in some patients VAP might occur without previous VAT, suggesting two different pathogenic pathways (Fig. 1).

We also agree that there is probably an overlap between these two infections, but no available examination could differentiate them at the bedside. CT scan and lung ultrasound are more efficient in diagnosing lung infiltrate than chest X-ray. However, to diagnose a new infiltrate, baseline examination is required. Additionally, fiberoptic bronchoscopy and BAL could probably not be used to

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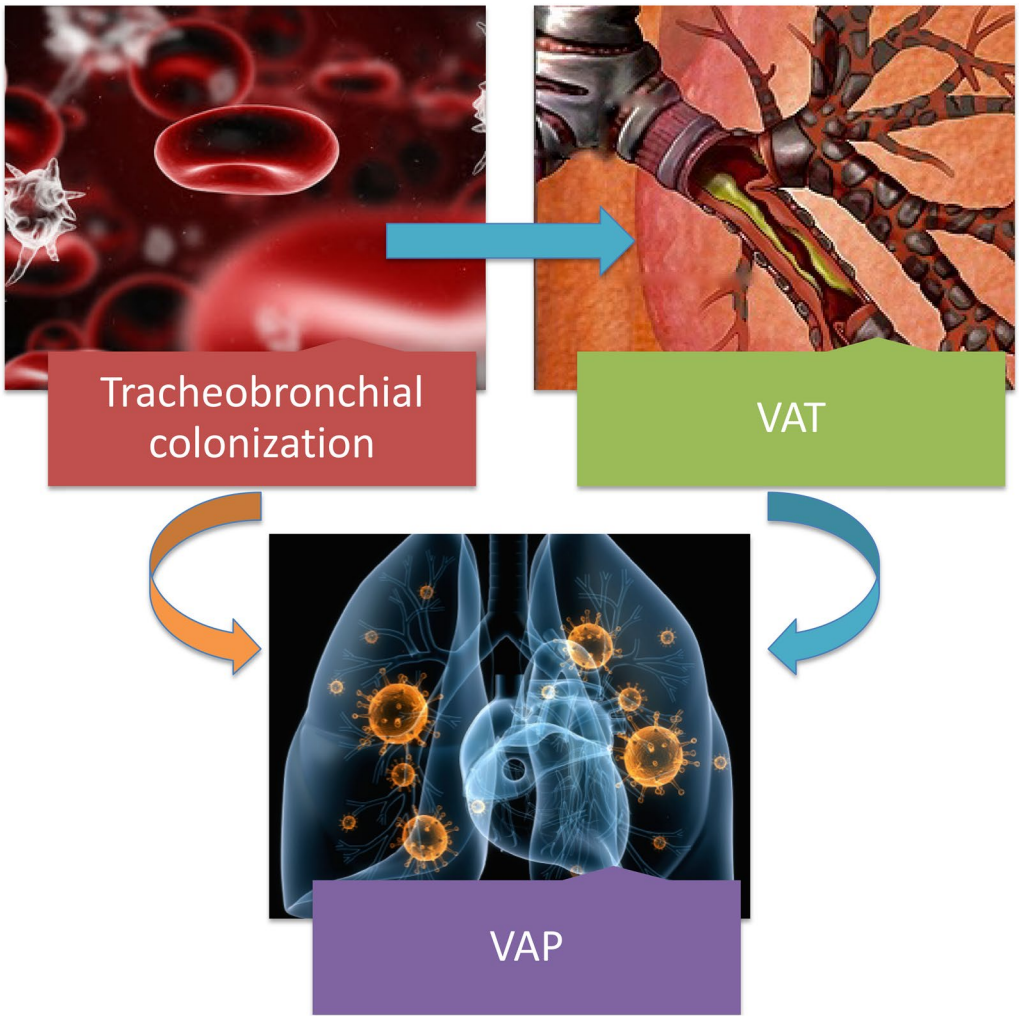

Fig. 1 Progression from tracheobronchial colonization to ventilator-associated tracheobronchitis (VAT) and ventilator-associated pneumonia (VAP)

differentiate VAT from VAP, as previous studies reported frequent high burden of bacteria on BAL in chronically ventilated patients without local or systemic signs of infection.

The recent large prospective multicenter multinational TAVeM study [4] allowed validation of a highly specific definition of VAT, and clearly showed that VAT and VAP are not associated with the same impact on outcome. Mortality rate was significantly higher in VAP patients compared with those with VAT and those with no VA-LRTI. In our opinion, this is a key finding supporting the fact that these two infections should be differentiated even if closely linked, and that VAT patients might benefit from a shorter duration of antibiotic treatment. The randomized double-blind controlled TAVeM2 study will soon start in France, and will evaluate the impact of two durations of systemic antibiotic treatment (3 or 7 days) versus no antibiotic treatment in a large cohort of VAT patients.

In their conclusion, Chastre and Luyt suggest deleting new or progressive infiltrate on chest X-ray from the VAP definition. This would probably result in increased use of antimicrobial treatment in VAT patients, without good data confirming the hypothesis that VAT should be treated by antimicrobials, and thus increases the emergence of multidrug-resistant bacteria in critically ill patients [5].

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Compliance with ethical standards

Conflicts of interest
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