



FIGURE 1. Scatter plots showing the relationship between 6-min walk test (6MWT) distance and a) pulmonary artery systolic pressure (P_{pas}) and b) early diastolic peak myocardial velocity (Em) of the tricuspid annulus.

majority of authors [2–5] agree that the degree of desaturation seems to be a strong predictor of mortality, as we also confirmed in our cohort. Importantly, exercise capacity is not only dependent on respiratory function; cardiac function and muscle function are other important factors that can come into play [7]. Moreover, poor 6MWT performance should raise suspicion of the presence of underlying pulmonary arterial hypertension.

As the prevalence of right ventricular dysfunction is high in patients with end-stage pulmonary disease [8], we believe that the echocardiographic evaluation of right ventricular function can be complementary to clinical evaluation and functional assessment in these patients.

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STATEMENT OF INTEREST

None declared.

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From the authors:

We thank G. Giannakoulas and co-workers for their interest in our study [1]. Unfortunately, haemodynamic measurements at rest or during exercise were not performed in our patients with interstitial lung diseases. Therefore, we were unable to evaluate the relationship between exercise tolerance and those physiological adjustments. In line with these results, however, we did find that oxygen pulse, an index of stroke volume in some circumstances [2], was positively related to the number of steps climbed in 6 min ($r=0.64$; $p<0.01$). Conversely, there was an inverse relationship between oxygen pulse and the nadir of oxyhaemoglobin desaturation at exercise cessation ($r= -0.57$; $p<0.01$).

Additional studies are needed to better characterise the haemodynamic responses to stepping and walking in these patients and their relationships with resting echocardiographic parameters and the severity of chronic hypoxaemia. We have preliminary data (data not published) suggesting that the step test also provides prognostic information in these patients and that it might constitute a more practical test paradigm than walking tests performed in clinical settings.

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STATEMENT OF INTEREST

None declared.

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Tracheotomy and ventilator-associated pneumonia: the importance of oral care

To the Editors:

We read with interest the recent study of NSEIR *et al.* [1], which demonstrated that tracheotomy was independently associated with a decreased risk of ventilator-associated pneumonia (VAP). The authors offered several potential explanations as to why tracheotomised patients should be at decreased risk of VAP compared to patients with translaryngeal intubation. These included liberation of the vocal cords, resulting in a reduced risk of aspiration of contaminated oropharyngeal secretions into the lung and the reduction in bacterial biofilm formation associated with regular changing of the tracheotomy cannula, and facilitation of weaning, leading to a shorter duration of mechanical ventilation.

An additional explanation that should also be considered is differences in the quality of oral care between tracheotomised patients and those with translaryngeal intubation. There is increasing evidence that dental plaque serves as an important reservoir for respiratory pathogens implicated in VAP [2]. Indeed, some hospitals have instigated formal oral care programmes in order to reduce VAP rates in high-risk patients [3]. However, in patients intubated *via* the translaryngeal route, the endotracheal tube may obscure the view of the oral cavity and impede access for adequate oral care [4]. Moreover, nurses are often reluctant to administer oral care for fear of dislodging the endotracheal tube [4]. Finally, the oral tracheal tube may, by holding the mouth open, predispose to xerostomia, an important contributory factor to poor oral hygiene [5].

Since all of these problems are obviated by tracheotomy, we would postulate that improved oral care also contributed to the reduction in ventilator-associated pneumonia seen in these patients.

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STATEMENT OF INTEREST

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We would like to thank P. Frost and M.P. Wise for their comments, and wish to respond to some of the points they raised.

Dental plaque, the oropharyngeal cavity and the stomach are potential reservoirs for microorganisms in critically ill patients. Aspiration of contaminated oropharyngeal and gastric secretions is common in intensive care unit (ICU) patients requiring mechanical ventilation through an endotracheal tube or a tracheotomy cannula [1]. The most important mechanism of ventilator-associated pneumonia (VAP) is gross or micro-aspiration of oropharyngeal microorganisms into the distal bronchi, followed by bacterial proliferation and parenchymal invasion, leading to bronchopneumonia [2]. Aspiration of oropharyngeal contents containing a large bacterial inoculum overwhelms host defences that are already compromised by critical illness and the presence of an endotracheal tube, thus leading to the development of VAP. Understanding this sequence of pathophysiological events, it would seem logical that reducing concentrations of oral microorganisms would have a beneficial effect on prevention of VAP [3].