Martin Albert
Daren Heyland

***Candida* in the respiratory tract secretions of critically ill patients and the impact of antifungal treatment: reply to Roux and Ricard**

Accepted: 5 September 2014
Published online: 19 September 2014
© Springer-Verlag Berlin Heidelberg and ESICM 2014

Dear Editor,
We would like to thank Drs Roux and Ricard for their comments [1]. They mainly appraised that our study [2] was biased from the start because of the methodology. We disagree with them on this affirmation because this is not a bias, this is just a different research question. Clearly, our study design was not built to clarify the potential role of a preemptive antifungal therapy in patients colonised with *Candida* in order to reduce the incidence of ventilator-associated pneumonia (VAP). Actually our research program was based on the observation that in the context of a clinical suspicion of VAP, the presence of *Candida* in the endotracheal secretions was associated with increased morbidity and mortality [3, 4]. We have not been able to demonstrate any clinical or inflammatory status improvement of such patients with an antifungal treatment in the CANTREAT study [2]. The literature

is generally concordant with a significant proinflammatory effect of *Candida* spp. in the lungs [5]. However, conflicting results have been obtained regarding the consequences of such *Candida* colonisation on impaired immune response, interaction with pulmonary pathogens and its clinical impact. Both negative and positive small clinical studies have been published [6]. Some recent studies on animals and humans support a potential role of *Candida* colonisation on subsequent bacterial pneumonia development [6, 7]. Consequently, we support the idea of a larger clinical trial looking at the effect of an antifungal therapy in patients colonised with *Candida* spp. trying to improve clinical outcome. Interestingly, their proposed study design is not in contradiction with our results and certainly has the potential to further explore the exact pathophysiological role of *Candida* spp. colonisation in the respiratory secretions.

References

1. Roux D, Ricard J-D (2014) Ask the wrong question, you'll get the wrong answer. *Intensive Care Med*. doi: [10.1007/s00134-014-3444-z](https://doi.org/10.1007/s00134-014-3444-z)
2. Albert M, Williamson D, Muscedere J, Lauzier F, Rotstein C, Kanji S, Jiang X, Hall M, Heyland D (2014) *Candida* in the respiratory tract secretions of critically ill patients and the impact of antifungal treatment: a randomized placebo controlled pilot trial (CANTREAT study). *Intensive Care Med* 40:1313–1322. doi: [10.1007/s00134-014-3352-2](https://doi.org/10.1007/s00134-014-3352-2)

3. Williamson DR, Albert M, Perreault MM, Delisle MS, Muscedere J, Rotstein C, Jiang X, Heyland DK (2011) The relationship between *Candida* species cultured from the respiratory tract and systemic inflammation in critically ill patients with ventilator-associated pneumonia. *Can J anesthesia* 58:275–284
4. Delisle MS, Williamson DR, Albert M, Perreault MM, Jiang X, Day AG, Heyland DK (2011) Impact of *Candida* species on clinical outcomes in patients with suspected ventilator-associated pneumonia. *Can Respir J* 18:131–136
5. Naglik JR, Richardson JP, Moyes DL (2014) *Candida albicans* pathogenicity and epithelial immunity. *PLoS Pathog* 10:e1004257
6. Hamet M, Pavon A, Dalle F, Pechinot A, Prin S, Quenot JP, Charles PE (2012) *Candida* spp. airway colonization could promote antibiotic-resistant bacteria selection in patients with suspected ventilator-associated pneumonia. *Intensive Care Med* 38:1272–1279
7. Ricard JD, Roux D (2012) *Candida* colonization in ventilated ICU patients: no longer a bystander! *Intensive Care Med* 38:1243–1245

M. Albert (✉)
Centre de recherche de l'Hôpital du Sacré-Coeur de Montréal, Département de Médecine, Université de Montréal, 5400 Gouin Ouest, Montréal, Canada
e-mail: m.albert@umontreal.ca
Tel.: 514-338-2050

D. Heyland
Kingston General Hospital and Clinical Evaluation Research Unit, Queen's University, Kingston General Hospital, Kingston, ON, Canada