

4. Perbet S, Mongardon N, Dumas F, Bruel C, Lemiale V, Mourvillier B, et al. Early-onset pneumonia after cardiac arrest: characteristics, risk factors and influence on prognosis. *Am J Respir Crit Care Med*. 2011;184:1048–54.

A.J. Roldán-Reina\*, R. Martín-Bermúdez,  
Y. Corcia-Palomo, L. Martín-Villén

*Department of Intensive Care, Hospital Universitario  
Virgen del Rocío, Sevilla, Spain*

\*Corresponding author. Álvaro Jesús Roldán Reina, C/San Vicente 22, escalera 1, 1/A. Tel.: +699259124.  
*E-mail address:* roldanyreina@gmail.com  
(A.J. Roldán-Reina).

<http://dx.doi.org/10.1016/j.medin.2017.05.008>  
0210-5691/

© 2017 Elsevier España, S.L.U. y SEMICYUC. All rights reserved.

## Reply to ‘‘Antibiotic resistance: thinking outside the hospital’’



### Respuesta a «Resistencia a antibióticos: pensando fuera del hospital»

Dear Editor,

We have read with interest the letter by Roldán-Reina et al.<sup>1</sup> in relationship with our point of view published in this journal<sup>2</sup> referring to the original article published 20 years ago.<sup>3</sup> We fully agree with the authors on their concern for progressive resistance of microorganisms that cause respiratory infection to cefuroxime and amoxicillin-clavulanic and consequently that they have become obsolete, these antibiotics should not be used for the prevention of ventilator-associated pneumonia in intubated coma patients.

The authors described the results of their recent retrospective and observational study<sup>4</sup> to evaluate the resistance patterns of the common microorganisms isolated from bronchial aspirates in patients admitted to the ICU after resuscitated cardiac arrest. In the study the most frequent were *Staphylococcus aureus* (22.2%), *Escherichia coli* (14.8%), *Enterobacter cloacae* (14.8%), *Klebsiella pneumoniae* (11.1%), *Serratia marcescens* (11.1%) and *Haemophilus influenzae* (7.4%). They observed that 48.1% of the isolated microorganisms were resistant to amoxicillin-clavulanic, 18.5% to piperacillin-tazobactam and 14.8% to third-generation cephalosporin. They described no microorganism was resistant to quinolones or carbapenems.

Thus, the authors give us an approximate idea as to what might be an alternative to cefuroxime for prevention of ventilator-associated pneumonia in coma patients, and we believe is time to develop new RCT to study other antibiotics for prophylaxis with no effect on normal anaerobic microbiota and with a broad-spectrum to Gram-positive and enteric Gram-negative bacilli. A good alternative to

cefuroxime might be levofloxacin, because the pharmacological properties are suitable and it is active against the causative micro-organisms.<sup>5</sup> However, we should pay special attention to the development of local antibiotic resistance, and maintaining the antibiotic prophylaxis only 24h (one dose in case of levofloxacin).

## References

1. Roldán-Reina AJ, Martín-Bermúdez R, Corcia-Palomo Y, Martín-Villén L. Antibiotic resistance: thinking outside the hospital. *Med Intens*. 2017;41:504–5.
2. Sirvent JM. Antibiotic prophylaxis against ventilator-associated pneumonia in patients with coma: where are we now. *Med Intens*. 2017;41:248–51.
3. Sirvent JM, Torres A, El-Ebiary M, Castro P, de Batlle J, Bonet A. Protective effect of intravenously administered cefuroxime against nosocomial pneumonia in patients with structural coma. *Am J Respir Crit Care Med*. 1997;155:1729–34.
4. Roldán-Reina AJ, Corcia-Palomo Y, Martín-Bermúdez R. Empiric antibiotic therapy after cardiac arrest. *Med Clin (Barc)*. 2017;148:92–3.
5. Marik PE. Aspiration pneumonitis and aspiration pneumonia. *N Engl J Med*. 2001;344:665–71.

J.M. Sirvent\*, J. González

*Department of Intensive Care (ICU), Study Group of Infections in Critically Ill Patients, Institut d'Investigació Biomèdica de Girona (IDIBGI), Hospital Universitari de Girona Doctor Josep trueta, Girona, Spain*

\*Corresponding author.

*E-mail addresses:* jsirvent.girona.ics@gencat.cat, jmsirvent4@gmail.com (J.M. Sirvent).

<http://dx.doi.org/10.1016/j.medin.2017.06.001>  
0210-5691/

© 2017 Elsevier España, S.L.U. y SEMICYUC. All rights reserved.