EuroSciCon

8th Edition of International Conference on

Infectious Diseases

June 07-08, 2018
London, UK

Catherine Mullié, J Prev Infect Cntrol 2018, Volume 4
DOI: 10.21767/2471-9668-C1-001

CARBAPENEM-RESISTANT ACINETOBACTER BAUMANNII SPREAD IN AMIENS UNIVERSITY HOSPITAL, FRANCE

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Hospital-acquired infections with multi-drug resistant (MDR) bacteria, a common occurrence in this environmental setting, are a well-established public health concern. In Amiens University Hospital, as a preventive action to reduce the patient-to-patient and patient-staff transmissions, a systematic screening has been set up in at-risk units such as intensive care units to identify carriers of MDR bacteria. Carbapenem-resistant *Acinetobacter baumannii* (CRAB) is one of those MDR bacteria. This specific category of bacteria has even been put on top of the WHO list of so-called superbugs for which there is an urgent need to find alternative treatments. Over the past two years, an increase in the number of CRAB carriers and infected patients has been witnessed with 21 (15 carriers + 6 infected) and 38 (23 carriers + 15 infected) patients identified in 2016 and 2017, respectively. CRAB carriages/infections peaked in the summer of each of these two years with small clusters developing in intensive care units; the digestive surgery unit in 2016; in dermatology and one of the intensive care units in 2017. The genotypic characterization of the antibiotic resistance for these strains showed that they all carried the OXA-23 carbapenemase and AmpC β-lactamase. Most of them also harboured the 16S rRNA ArmA methylase and some the TEM (5 strains) or the RTG2 (1 strain) β-lactamase. However, they all remained susceptible to colistin. In addition to the data generated by the epidemiological investigations led in the clinical units to search for a common source, the phylogenetic analysis (Rep-PCR/ERIC PCR, MLST sequencing) of the isolated strains will help in defining whether this outbreak is linked with the spread of one or several clones of CRAB and in adapting hygienic recommendations accordingly.

Recent Publications

1. Neves F C, Clemente W T, Lincopan N, Paião I D, Neves P R, Romanelli R M, Lima S S, Paiva L F, Mourão P H and Nobre-Junior V A (2016) Clinical and microbiological characteristics of OXA-23- and OXA-143-producing *Acinetobacter baumannii* in ICU patients at a teaching hospital, Brazil. Brazilian Journal of Infectious Disease 20(6):556-563.
2. Pasanen T, Koskela S, Mero S, Tarkka E, Tissari P, Vaara M, Kirveskari J (2014) Rapid molecular characterization of *Acinetobacter baumannii* clones with rep-PCR and evaluation of carbapenemase genes by new multiplex PCR in Hospital District of Helsinki and Uusimaa. PLoS One 9(1):e85854.
3. Chen C H, Kuo H Y, Hsu P J, Chang C M, Chen J Y, Lu H H, Chen H Y and Liou M L (2017) Clonal spread of carbapenem-resistant *Acinetobacter baumannii* across a community hospital and its affiliated long-term care facilities: A cross sectional study. Journal of Microbiology, Immunology and Infection S1684-1182(17)30153-6.
4. Diancourt L, Passet V, Nemec A, Dijkshoorn L and Brisse S (2010) The population structure of *Acinetobacter baumannii:* expanding multiresistant clones from an ancestral susceptible genetic pool. PLoS One 5(4):e10034.

Biography

Catherine Mullié has obtained her PhD in Microbiology and PharmD at the University of Lille, France, in 1999. After a Post-doc year at the Faculté de Medicine in Amiens (Laboratoire d'Immunologie, INSERM-EMI 0351), she was appointed as Assistant Professor at the Faculté de Pharmacie in

Amiens in 2000 and joined the LG-2A in 2008. She has been a member of the French Society for Microbiology since 2000. Her research is focused on the development of new antimicrobial and antimalarial drugs, with a special interest in efflux-mediated antibiotic resistance in *Pseudomonas aeruginosa* and *Acinetobacter baumannii*. She currently heads the French part of a bilateral project funded by France and Algeria (Partenariat Hubert Curien Tassili) on this topic.

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