Received Date : 09-Dec-2013

Revised Date : 07-Apr-2014

Accepted Date : 10-Apr-2014

Article type : Original Article - E-only

Genotyping, Local Prevalence, and International Dissemination of β-Lactamase-Producing *Kingella kingae* Strains

Romain Basmaci[1,2,3], Stéphane Bonacorsi[1,2,3], Philippe Bidet[1,2,3], Nataliya V. Balashova[4], Jenny Lau[4], Carmen Muñoz-Almagro[5], Amadeu Gene[5], Pablo Yagupsky[6]

1: IAME, UMR 1137, INSERM, F-75018 Paris, France

2: IAME, UMR 1137, Univ Paris Diderot, Sorbonne Paris Cité, F-75018 Paris, France

3: AP-HP, Laboratoire de Microbiologie, Hôpital Robert-Debré, F-75019 Paris, France

4: Department of Oral Biology, Rutgers School of Dental Medicine, Newark, New Jersey 07103, USA.

5: Departamento de Microbiología Molecular, Hospital Universitario Sant Joan de Déu, Barcelona, Spain.

6: Clinical Microbiology Laboratory, Soroka University Medical Center, Ben-Gurion University of the Negev, Beer-Sheva, Israel.

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1111/1469-0691.12648

Running Title: β-Lactamase-Producing *K. kingae* Strains

Key words: *Kingella kingae,* β-lactamase, clones, genotypes, dissemination

Corresponding author: Stéphane Bonacorsi. Mailing address: Service de Microbiologie, Hôpital Robert-Debré, 48 Boulevard Sérurier, 75019 Paris, France. Phone: 33 (0)1 40 03 57 92. Fax: 33 (0)1 40 03 24 50. e-mail: stephane.bonacorsi@rdb.aphp.fr

ABSTRACT

β-lactamase production has been sporadically reported in the emerging *Kingella kingae* pathogen but the phenomenon has not been studied in-depth. We investigated the prevalence of β-lactamase production among *K. kingae* isolates from different geographic origins and genetically characterized β-lactamase-producing strains.

778 isolates from Iceland, the USA, France, Israel, Spain and Canada were screened for β-lactamase production and, if positive, were characterized by PFGE and MLST genotyping, as well as *rtx*A, *por,* bla_{TEM} and 16S rRNA sequencing.

β-lactamase was identified in invasive strains from Iceland (n=4/14, 28.6%), the USA (n=3/15, 20.0%) and Israel (n=2/190, 1.1%) and in carriage strains in the USA (n=5/17, 29.4%) and Israel (n=66/429, 15.4%). No French, Spanish or Canadian isolates were β-lactamase producers. Among β-lactamase producers, a perfect congruency between the different typing methods was observed. Surprisingly, all US and Icelandic β–lactamase-producing isolates were almost indistinguishable, belonged to the major international invasive PFGE clone K/MLST ST-6, but differed from the four genetically unrelated Israeli β–lactamase-producing clones. Representative strains of different genotypes produced TEM-1 enzyme.