Low Prevalence of $\text{bla}_{\text{OXA-143}}$ in Private Hospitals in Brazil

We read with great interest C. S. Antonio et al.’s letter describing the high prevalence of Acinetobacter baumannii carrying $\text{bla}_{\text{OXA-143}}$ in Brazilian hospitals (1). Recently, we carried out a similar study, and although the $\text{bla}_{\text{OXA-143}}$ gene was identified, its frequency was lower than that reported by Antonio et al. (1).

During 2008, a total of 803 Gram-negative bacillus isolates, 1 isolate per patient, were collected from 17 private hospitals located in eight cities from four distinct geographic Brazilian regions. Among them, 91 (11.3%) were A. baumannii isolates that were recovered mainly from the respiratory tract (70.3%) and bloodstream (24.2%). Susceptibility testing was performed by CLSI broth microdilution (3).

The detection of metallo-/H9252-lactamase-encoding genes was performed by multiplex PCR (5, 7, 9) and confirmed by sequencing. The presence of the insertion sequence IS$\text{Abal}$ upstream of the CHDL-encoding genes was also investigated. Genetic relatedness among CHDL-producing A. baumannii isolates, including the first OXA-143-producing A. baumannii clone isolated in Brazil (4), was evaluated by pulsed-field gel electrophoresis (PFGE).

A total of 83/91 (91.2%) isolates were resistant to carbapenems. In addition, we observed high rates of susceptibility to amikacin (18.7%), ceftazidime (12.1%), cefepime (8.8%), piperacillin-tazobactam (3.3%), and ciprofloxacin (3.3%). In contrast, most A. baumannii isolates were susceptible to polymyxin B (MIC$_{90}$, 1 µg/ml; 97.8% of the isolates were susceptible).

The CHDL-encoding genes were not identified in our study, as was also reported by Antonio et al. (1). However, we identified the $\text{bla}_{\text{OXA-23}}$ gene in carbapenem-resistant isolates more frequently than in the former study (83.5% versus 41.7%). The $\text{bla}_{\text{OXA-23}}$ gene was found in all carbapenem-resistant isolates from the cities of Belo Horizonte, Blumenau, Curitiba, and São Luís, followed by Rio de Janeiro (93.7%), Porto Alegre (80.0%), and São Paulo (69.0%). These results are in accordance with previous local reports (2, 4, 6), which emphasize that this gene is widespread in our country. The IS$\text{Abal}$ element was positioned upstream of $\text{bla}_{\text{OXA-23}}$ in all isolates, whereas no insertion sequence was observed upstream of $\text{bla}_{\text{OXA-51}}$. Although A. baumannii carrying $\text{bla}_{\text{OXA-51}}$ and $\text{bla}_{\text{OXA-72}}$ had recently been described in Brazil (1, 8), no isolates carrying these variants were found in our study.

Nine distinct PFGE clones were identified among the 76 OXA-23-producing A. baumannii isolates. The predominance of a single clone (clone A [36.8% of the isolates]) was observed in isolates collected from six distinct Brazilian cities. This clone exhibited a PFGE profile similar to that of the first Brazilian clone producer of OXA-23 (4). A. baumannii belonging to clones B (17.1%) and D (9.2%) were also identified in isolates collected from distinct cities, while other genotypes were identified in specific locations.

While Antonio et al. (1) reported a high prevalence of the $\text{bla}_{\text{OXA-143}}$ gene (58.3%), we found that only 7 of 83 (8.4%) A. baumannii isolates carried this gene. These isolates were collected from a few hospitals located in the cities of São Paulo ($n = 6$) and Rio de Janeiro ($n = 1$). In both studies, the majority of OXA-143-producing A. baumannii isolates were recovered from cities located in São Paulo State. However, while Antonio et al. observed that 70% (21/30) of the isolates from this region carried the $\text{bla}_{\text{OXA-143}}$ gene, in the present study, we identified this resistance determinant in only 20.7% (6/29) of isolates collected from São Paulo.

Moreover, we have observed the predominance of a single PFGE clone among the seven OXA-143-producing A. baumannii isolates, which contrasts with results obtained by Antonio et al., in which 7 distinct enterobacterial repetitive intergenic consensus sequence (ERIC) PCR clones harbored the $\text{bla}_{\text{OXA-143}}$ gene. Nevertheless, in their study, the high prevalence of OXA-143-producing isolates could also be partially justified by the intrahospital spread of a single clone, which corresponded to 57.1% of all OXA-143-producing isolates (1). The high prevalence of $\text{bla}_{\text{OXA-23}}$ found in our study may also be justified by intra- and interhospital spread of endemic clones. The results of these two studies show that the prevalence of CHDLs may vary according to the disseminated clone in a specific hospital or region and emphasize the importance of appropriate adherence to infection control measures. Thus, wide national surveillance studies are necessary to analyze the real prevalence of CHDLs in Brazilian hospitals.

REFERENCES


Authors’ Reply

The foregoing letter by Werneck et al. provides additional information on the occurrence of carbapenem-hydrolyzing class D β-lactamase (CHDL)-encoding genes among Acinetobacter baumannii isolates collected from private hospitals in Brazil. In the results, the authors reported a lower prevalence of blaOXA-143 (8.4%) among their study isolates than among the isolates in our previous report (58.3%), which included carbapenem-resistant A. baumannii isolates collected from public hospitals (1). In this regard, there are several factors to be considered for the apparently discordant results, besides hospital type. In fact, as mentioned by Werneck et al., in our study, the high prevalence of OXA-143-producing A. baumannii isolates could partially be justified by the intrahospital spread of a single clone. Regardless, valuable information in the letter by Werneck et al. was the identification of OXA-143-producing A. baumannii carrying blaOXA-143 in Rio de Janeiro (second-largest metropolitan area in Brazil after São Paulo), which is worrisome, since, apparently, strains of A. baumannii carrying blaOXA-143 have been restricted to hospitals located in São Paulo (1). In this regard, the prevalence of CHDLs may also vary according to specific region. Thus, although data on OXA-143 are currently few (1, 3), there is supportive evidence that A. baumannii strains carrying blaOXA-143 genes are spread-

ing in Brazilian hospitals (N. Lincopan et al., unpublished data).

Surprisingly, like the SPM-1 metallo-beta-lactamase, the novel OXA-143 enzyme was identified for the first time in Brazil (3, 4). Currently, SPM-1-producing Pseudomonas aeruginosa strains are endemic to and highly prevalent in Brazilian hospitals (2). So, for Brazil, the widespread occurrence of SPM-1 should provide a salutary lesson from which to draw experience in order to avoid the spread of OXA-143-producing A. baumannii isolates. The rapid emergence of these isolates and their potential spread require very close monitoring and surveillance.

REFERENCES


Charline S. Antonio
Patricia R. Neves
Micheli Medeiros
Elsa M. Mamizuka
Department of Clinical Analysis
School of Pharmacy
Universidade de São Paulo
São Paulo, Brazil

Maria R. Elmor de Araújo
Laboratory of Clinical Microbiology
Hospital Beneficência Portuguesa
São Paulo, Brazil

Nilton Lincopan*
Department of Microbiology
Institute of Biomedical Sciences
Universidade de São Paulo
CEP 05508-000
São Paulo, Brazil

*Phone: 55 (11) 3091 7296
Fax: 55 (11) 3091 7354
E-mail: lincopan@usp.br