

Early Dissemination of KPC-2-Producing *Klebsiella pneumoniae* Strains in Brazil[∇]

A recent publication by Monteiro et al. reported the first detection of KPC-2 β -lactamase in carbapenem-resistant *Klebsiella pneumoniae* strains in Brazil, which occurred in 2006 (5). The authors reported that, between September and November of 2006, four carbapenem-resistant *K. pneumoniae* strains, harboring the *bla*_{KPC-2} gene, were isolated from four patients hospitalized in a hospital in the city of Recife, northeastern Brazil. Just 1 month after their letter was published, detection of KPC-2 carbapenemase was also reported in six *K. pneumoniae* isolates recovered from two hospitals (from September 2007 to May 2008) in Rio de Janeiro, southeastern Brazil (7). Moreover, in the last year, another three groups of investigators reported, in different national meetings, the emergence of KPC-2 carbapenemase-producing *K. pneumoniae* in São Paulo and Rio de Janeiro (1, 2, 9). Here, we present evidence that KPC-producing *K. pneumoniae* has been emerging in Brazilian hospitals since at least 2005. In this regard, from 2003 to 2008, we have conducted a regional carbapenem-resistant surveillance survey in order to determine the occurrence of carbapenemases in gram-negative isolates from clinical settings in the southeastern region of Brazil. Currently, we have identified 31 imipenem-resistant *Enterobacteriaceae* isolates from eight medical centers, which were screened for the presence of carbapenemases and genes encoding IMP, VIM, and KPC β -lactamases, using the combined disk assay with disks containing ceftazidime, imipenem, meropenem, or cefepime, either alone or in combination with 400 μ g of boronic acid or 100 mM EDTA, and DNA amplification by PCR, respectively. Eight imipenem-resistant isolates (six isolates of *K. pneumoniae*, one isolate of *Providencia rettgeri*, and one isolate of *Enterobacter* sp.) carried the *bla*_{IMP-1} class B metallo- β -lactamase gene (3, 8), whereas two *K. pneumoniae* strains isolated in May 2005 (FCF13/05) and November 2007 (FCF35/07) carried the *bla*_{KPC-2} class A carbapenemase gene. Both KPC-2-producing *K. pneumoniae* isolates, which had been recovered from blood cultures from two patients in two medical centers in São Paulo City, were not clonally related and showed resistance to all β -lactam antibiotics, including ceftazidime (MIC of 256 μ g/ml), ceftazidime (MIC of ≥ 64 μ g/ml), imipenem (MIC of ≥ 32 μ g/ml), meropenem (MIC of ≥ 256 μ g/ml), and ertapenem (MIC of ≥ 256 μ g/ml). The production of KPC-2 was associated with a positive bioassay (i.e., satellite growth of *Micrococcus luteus* ATCC 9341 around the *K. pneumoniae* strain, growing on Mueller-Hinton agar plates containing 10^8 CFU of the ATCC strain/ml and imipenem at a concentration of 0.06 or 0.12 μ g/ml) and boronic acid inhibition tests (10), whereas the presence of the *bla*_{KPC-2} gene was confirmed by PCR and sequencing (GenBank accession no. FJ641196 and FJ641197). Therefore, KPC-2-producing *K. pneumoniae* seems to have emerged in São Paulo in 2005 and was later observed in two other states in Brazil, as opposed to IMP-1-producing *K. pneumoniae*, which emerged in Brazil in 2003 (4) and has been detected only in São Paulo state so far (3). Since KPC-2-producing strains have already become established in Latin America (1, 2, 5–7, 9, 11, 12), we emphasize the need for continuous local surveillance programs in order to prevent the wide spread of these strains.

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