Emergence of an Autochthonous and Community-Acquired NDM-1–Producing Klebsiella pneumoniae in Europe

To the Editor—The recently identified carbapenemase New Delhi metallo-β-lactamase (NDM-1) inactivates all β-lactams except aztreonam [1]. The corresponding gene that is usually plasmid-borne has spread mostly in Escherichia coli and Klebsiella pneumoniae [1, 2]. NDM-1 producers are multidrug resistant or even resistant to all antibiotics [1, 2]. Whereas contamination with NDM-1 producers is mostly hospital associated, rare cases of community acquisition are known and have been traced to the Indian subcontinent [2].

Here, we report a woman aged 83 years who had cystitis due to a multidrug-resistant K. pneumoniae in June 2011. She had a history of multiple and recurrent episodes of urinary tract infections caused by diverse Enterobacteriaceae that were always treated with narrow-spectrum antibiotics. Because the patient’s symptoms tended to disappear spontaneously and rapidly, the latest cystitis episode had not been treated.

K. pneumoniae EDU was resistant to all β-lactams, including carbapenems, as detected with a Vitek-2 automated susceptibility testing system (bioMérieux), with minimal inhibitory concentrations for imipenem, ertapenem, doripenem, and meropenem of 4, 12, 4, and 6 μg/mL, respectively [3]. It was also resistant to gentamicin, kanamycin, tobramycin, sulfonamides, rifampin, chloramphenicol, and fluoroquinolones but remained susceptible to amikacin, fosfomycin, colistin, tetracycline, and tigecycline according to the Clinical Laboratory Standards Institute guidelines [4].

Polymerase chain reaction, sequencing, and plasmid analysis, performed as described elsewhere [5], revealed that K. pneumoniae EDU harbored the blaNDM-1 carbapenemase gene and the blaCTX-M-15 extended-spectrum β-lactamase gene, which were located on 2 different plasmids (both being approximately 150 kb in size). The isolate coexpressed the CMY-2 cephalosporinase gene, which was located on the blaNDM-1 plasmid. In addition, it possessed the qnrB gene encoding resistance to quinolones and the blatOX-1 gene encoding a restricted-spectrum oxacillinase, both genes being located on the blaCTX-M-15 plasmid. Both plasmids were self-transferable by conjugation, and the blaNDM-1 plasmid was found to be of the IncA/C broad-host range type [6]. Multilocus sequence typing [7] results showed that K. pneumoniae EDU belonged to the sequence type 1, whereas previously reported NDM-1–positive K. pneumoniae isolates were of other sequence types (eg, ST14 and ST147) [6].

Neither this patient nor her husband had traveled to any country in the previous 3 years, including countries with a high prevalence of NDM-1 producers (India, Pakistan, Bangladesh, United Kingdom, Balkan states, and Middle Eastern nations) [2]. The patient was living in a small-size town in southern France, without special diet (Indian cuisine). Her single foreign contact was a Moroccan maid. She did not have contacts with hospitalized patients and did not have a history of hospitalization within the previous 5 years. Whereas autochthonous acquisition of a NDM producer was reported in July 2011 in Canada [8], the case here is an autochthonous case of community acquisition. It may correspond to the ultimate spread of NDM-1 producers outside its main reservoir (Indian subcontinent). The source of contamination remains unknown but may be difficult to find, because persistence of NDM-1 producers in human flora has been evidenced to be >1 year [9].

This present report may indicate the ongoing spread of NDM producers in the community worldwide. A nightmare perspective could be its spread similar to that reported for extended-spectrum β-lactamases of the CTX-M-type, which are now uncontrolled.

Notes

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