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Emergence of *Klebsiella pneumoniae* and *Salmonella* Metallo-Beta-Lactamase (NDM-1) Producers on Reunion Island

The first incident we report here, which occurred on 16 November 2011, involved a 59-year-old French man who was admitted to a Mauritius hospital for decompression sickness. The patient was transferred on 18 November to the French Hospital in the south of Reunion Island. The patient did not receive any antibiotic therapy. In France, patients transferred from a hospital abroad must be screened for multidrug-resistant bacteria (MDR) in the feces. On the day of admission, a rectal screening for MDR was performed on chromID ESBL (extended spectrum β-lactamase) medium (bioMérieux, La Balme-Les-Grottes, France). A strain of *Klebsiella pneumoniae* was isolated, which Vitek Compact testing (bioMérieux) showed to be resistant to imipenem and ertapenem according to the criteria of the European Committee on Antimicrobial Susceptibility Testing. The modified Hodge test (1) with an ertapenem disk was negative for this strain. The isolate was subsequently tested for carbapenemase and ESBL genes by Check-MDR CT102 (2) (Check-Points Health BV, The Netherlands) and was positive for the NDM-1 carbapenemase and CTX-M group 1 ESBL genes.

The second incident we report, which occurred on 12 March 2012, involved a 73-year-old French man who was transferred from India to the same unit on Reunion Island. The patient was originally hospitalized in late December 2011 with an intracranial bleed in an Indian hospital (Chennai). On 29 December, the patient was febrile with purulent endotracheal secretions. An ESBL-producing *Klebsiella pneumoniae* strain was isolated from the patient's sputum. Treatment with unknown antibiotics was initiated, but on 16 January, because the patient was still febrile, urine, blood, and endotracheal secretions were cultured. The following bacteria were isolated from these samples: ESBL-producing *Escherichia coli* (urine) and ESBL-producing *Klebsiella pneumoniae* (bronchoalveolar lavage [BAL] fluid obtained by blind BAL [mini-BAL]). After recovering, the patient was transferred to Reunion Island.

Upon the patient's arrival, a rectal swab was cultured on chromID ESBL medium. *Escherichia coli* and *Klebsiella pneumoniae* grew on this medium. An ESBL phenotype was confirmed by a double-disc diffusion synergy test (discs of amoxicillin-clavulanic acid, ceftazidime, cefotaxime, aztreonam, and cefepime). A *Salmonella* sp. strain resistant to imipenem was isolated from a sample of urine. The serotype of this *Salmonella* strain was not identified by our common set of working antisera, and the strain was therefore sent to the National Reference Center (CNR E.coli/Shigella/Salmonella; Institut Pasteur, Paris, France). CNR identified *Salmonella enterica* subsp. *enterica* serotype Westhampton. This *Salmonella* strain was also isolated from a second sample of feces after selenite broth enrichment. MICs were determined (Vitek) for the *Salmonella* strain, and the modified Hodge test was positive. This strain was tested for carbapenemase genes by Check-MDR CT102 and was positive for NDM-1 carbapenemase, CTX-M group 1, and TEM ESBL genes.

The *K. pneumoniae* and *E. coli* isolates were positive for ESBL genes (ESBL CTX-M group 1 and SHV mutations at position G238S/A for *K. pneumoniae* and ESBL CTX-M group 1 and SHV mutations at position G238S/A and E240K for *E. coli*) but not for carbapenemase genes.

For the first time, we report the emergence of NDM-1 producers in Reunion Island, in two patients who were transferred from Mauritius and India, and we report the identification of the second *Salmonella* NDM producer ever to be described (3).

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Florian Cabanes
Jérome Lemant
Intensive Care
University Hospital
Saint Pierre, La Réunion, France

Sandrine Picot
Catherine Simac
Microbiology
University Hospital
Saint Pierre, La Réunion, France

Julien Cousty
Laurence Jalin
Intensive Care
University Hospital
Saint Pierre, La Réunion, France

Florence Naze
Microbiology
University Hospital
Saint Pierre, La Réunion, France

Véronique Boisson
Marie-Pierre Cresta
Hélène André
Laure Thibault
François Tixier
Arnaud Winer
Emmanuel Antok
Intensive Care
University Hospital
Saint Pierre, La Réunion, France

Alain Michault
Microbiology
University Hospital
Saint Pierre, La Réunion, France

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Address correspondence to Jérome Lemant, jerome.lemant@chr-reunion.fr.

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