Evaluation of Amplidiag CarbaR kit for the accurate detection of carbapenemase-producing bacteria

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OBJECTIVES

The Amplidiag® CarbaR+VRE has been tested on a collection of 100 well-characterized isolates with a reduced susceptibility to carbapenems, and 200 isolates collected at the French National Reference Center for Antibiotic Resistance between January and February 2016.

INTRODUCTION

Carbapenemase-producing Enterobacteriaceae (CPE) and carbapenemase-producing non-fermenters (CPNF; Pseudomonadaeae and Acinetobacter sp.) have been increasingly reported worldwide. Therefore, reliable detection of carbapenemase production is essential for the prompt implementation of infection control measures able to prevent clonal expansion or transfer of carbapenemase genes. We evaluated the performance of the Amplidiag® CarbaR+VRE (Mobidiag Ltd, Espoo, Finland), a qualitative multiplexed nucleic acid-based in vitro diagnostic test.

METHODS

Qualitative multiplexed nucleic acid-based diagnostic test intended for the detection of carbapenemase was performed on pure DNA. Targeted genes are blaKPC, blaOXA, blaVIM, blaGES, and blaNDM. Carbapenemase-producing bacteria were identified with Amplidiag CarbaR kit.

CONCLUSIONS

The Amplidiag® CarbaR+VRE was able to detect all targeted genes including their variants. The main advantage of this test is that it contains a large panel of targeted resistance determinants. As claimed by the manufacturer, other carbapenemases such as GES-like carbapenemases (GES-2, GES-5 in P. aeruginosa, GES-14 in A. baumannii), GIM-1, AIM-1, SPM-1, DIM-1 or OXA-198 in P. aeruginosa, or OXA-143-like in A. baumannii were not detected. The Amplidiag® CarbaR+VRE assay is well adapted to the French epidemiology with a good sensitivity and specificity. Interestingly, this assay could detect also A. baumannii carbapenemases producing Enterobacteriaceae, as recently described in a OXA-58-producing P. mirabilis isolate.