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; Pseudomonadaceae 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, blaNDM, blaOXA-48, blaIMP, blaOXA-48/blaKPC, Acinetobacter OXA genes including blaOXA-23, blaOXA-24/40, blaOXA-58, and blaOXA-58 with upstream promoter I5ABA1. (vanA and vanB genes were not evaluated)

RESULTS

迦 Results of the 100 well-characterized isolates

迦 Results of the prospective study on 200 isolates collected at the F-NRC for Antibiotic Resistance

迦 Results for PCR directly on colonies grown on MH medium

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.

Requires DNA extraction, but works on colonies directly (4h/2h)

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.