

O0192 Eazyplex Superbug CRE system as a rapid diagnostic method for carbapenemase-producing Gram-negative bacteria: a prospective study in a Spanish tertiary hospital

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Background: Multidrug resistance is an important threat to Public Health. Rapid diagnostic methods are needed to shorten the time of detection of resistant isolates. The objective of the study was to evaluate the performance of the Eazyplex SuperBug system (Amplex Biosystems GmbH, Giessen, Germany) for the identification of resistance genes in Gram-negative bacteria.

Materials/methods: The study took place at the Microbiology Service of the Consorcio Hospital General Universitario de Valencia (Spain), between December 2016 and August 2017. A total of 171 Gram-negative rods corresponding to 171 patients were included in the study after showing resistance to carbapenems: *Enterobacter cloacae* (3), *Enterobacter aerogenes* (3), *Escherichia coli* (4), *Proteus mirabilis* (1), *Pseudomonas aeruginosa* (11), *Serratia marcescens* (1), *Klebsiella pneumoniae* (146) and *Klebsiella oxytoca* (2). Phenotypic methods such as β -CARBAtest (Bio Rad) and ESBL and carbapenemase production detection kit (ROSCO diagnostic) were performed in order to compare them to the Eazyplex SuperBug system, which is a qualitative genotypic diagnostic test, consisting of an isothermal amplification reaction detecting VIM, OXA-48, OXA-181, KPC carbapenemase and CTX-M-1 and CTX-M-9 Extended Spectrum β -lactamase (ESBL). *Escherichia coli* ATCC 25922 (susceptible strain) and *Klebsiella pneumoniae* ATCC BAA 1705 (KPC producer) were used as control strains.

Results: After analyzing all the 171 isolates, it was found that 150 of them (87,7%) harbored a resistance gene. The most frequently characterized β -lactamase was CTX-M-1, which was detected in 119 isolates, whereas CTX-M-9 was detected only in 7 isolates. The most frequently characterized carbapenemase was OXA-48 (112/65,5%), followed by NDM metallo β -lactamase (14/8%). Co-production of OXA-48 and NDM was found in 16 cases, all of them in *Klebsiella* spp. After analyzing the phenotypic detection of both carbapenemase and ESBL production, 100% agreement was observed with the Eazyplex SuperBug system.

Conclusions: It is certainly known that patients infected by carbapenemase-producing Gram-negative bacteria have higher mortality rates and thus require an effective and quickly adjusted treatment. The use of rapid diagnostic tests such as Eazyplex SuperBug system has proved to be a reliable and easy-to-use tool, as it gives a result in just 15 minutes and can help the Physicians choose an adequate antimicrobial therapy, consequently improving the patient's outcome.

