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ePoster Viewing
Diagnostics: detection of ESBLs and carbapenemases

MODIFIED PROCEDURE FOR CARBA NP DETECTION OF CARBAPENEMASE-PRODUCING BACTERIA DIRECTLY FROM BLOOD CULTURES

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Objectives: To detect carbapenemase-producing strains by applying the Carba NP test directly to positive blood cultures.

Methods: Twenty-five blood cultures positive for carbapenemase-producing strains were obtained at the Microbiology Laboratory of Verona between March and September 2013. Twenty-two isolates were KPC producers (21 *K. pneumoniae* and 1 *E. coli*) and 3 were *P. aeruginosa* VIM producers. All enzymes were characterized by PCR, and all isolates proved positive with the Carba NP test performed directly from the colonies.

The Carba NP test was also directly applied to all these samples by following both the protocol proposed by Nordmann *et al.* (Dortet CMI 2013) for 'spiked' (simulated) blood cultures and our revised protocol. The latter consisted of plating three drops of positive blood culture on MHA medium. Plates were incubated at 37°C and every hour (starting two hours after the inoculation) the bacteria were collected with a swab and tested with the unmodified Carba NP normally used for isolated colonies. The two protocols were also applied to spiked cultures simulated with the same strains.

Results: Only three specimens out of 25 resulted positive when the Carba NP test was performed on the original blood cultures (Nordmann's protocol). But all 25 resulted positives when we used either our modified protocol or spiked blood cultures containing the same isolates as the original blood cultures.

The only three positive results obtained with the original protocol contained 10^8 UFC, whilst the UFC counts of the Carba-NP-negative blood cultures ranged between 10^4 and 10^8/ml and the UFC counts of spiked cultures ranged between 10^9 and 10^{12}/ml. In our modified protocol, 76% of the blood cultures proved positives after 4 hours of incubation and 100% after 6 hours.
Conclusions: By means of a modified protocol, we could successfully apply the Carba NP test directly to 25 blood cultures positive for carbapenemase-producing strains. The need for modifying the protocol successfully applied by Nordmann *et al.* to spiked blood cultures is possibly related to the fact that real specimens can hardly reach a number of UFC/ml sufficient to perform the original test. The modified protocol is very easy to perform in every microbiology laboratory.