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P2332 Carbapenemase-producing Enterobacteriaceae (CPE) detection directly from surveillance rectal swab by immunochromatographic test

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Background: The prevalence of CPE is increasing worldwide. Control of their spread is important in hospital settings and should relies on the use of rapid diagnostic techniques. Herein we evaluated an immunochromatographic device, K-set OOK®, to rapid detected KPC, OXA-48 and OXA-163-producing Enterobacteriaceae directly from rectal swabs using enrichment broth in different incubation periods.

Materials/methods: All rectal swabs for CPE detection were included in this study between Aug and Nov/2017. The samples were inserted and homogenized into a 3 mL BHI tube and subcultured onto MacConkey (MAC) agar plate with carbapenem discs (culture based method; CBM). Ten microliters were delivered onto a Chromagar KPC® plate for bacterial colony count (BCC). All plates were incubated at 35°±2°C overnight. In parallel, the bacterial pellet recovered from 400 µL of BHI suspension was submitted to K-Set OOK at time zero (T0). The BHI tube was incubated with a meropenem disc (10 µg) and the K-Set OOK test was repeated at T1h; T2h; T4h; T6h and T8h. Carbapenem susceptibility testing was performed to all bacterial colonies recovered from MAC. The K-Set OOK results were compared to CBM and discordant results were submitted to detection of bla_{KPC}, bla_{NDM} and bla_{OXA-48}. Statistical analysis were performed according to the incubation period and BCC.

Results: From 503 samples, 126 (25%) were positive for CPE by CBM. The K-Set OOK sensitivity (SE) and specificity (SP) were 91% and 100%, respectively. The SE was proportional to incubation period (T0, 25%; T1, 37%; T2, 52%; T4, 69%; T6, 79% and T8, 91%). The K-Set OOK detected 67%, 98%, 98% of CPE at $\leq 10^3$, 10^4, $\geq 10^5$ UFC/mL BCC, respectively. All CPE were KPC-producing isolates, except for 1 NDM-producing *K. pneumoniae*.

Conclusions: The K-Set OOK proved to be a sensitive test for detecting KPC directly from rectal swabs at the same day. Since the test is designed to detect only KPC, OXA-48 and OXA-163, false-negative results can occur due to the presence of other carbapenemases. For this reason, it should be performed in parallel to culture.