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ePoster Viewing
Diagnostics: detection of ESBLs and carbapenemases

EVALUATION OF CHROMID OXA-48 FOR THE RECOVERY OF CARBAPENEMASE-PRODUCING ENTEROBACTERIACEAE FROM RECTAL SWABS FROM HOSPITALIZED PATIENTS IN ANKARA, TURKEY.

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Objectives: To critically assess three culture methods for screening hospitalized patients in Ankara, Turkey, for potential gut colonization with carbapenemase-producing Enterobacteriaceae (CPE).

Methods: Direct inoculation of two commercially available chromogenic media (chromID OXA-48 and chromID CARBA) was compared with the routinely-used CDC method that entails overnight enrichment in a carbapenem-supplemented broth followed by culture of the broth onto MacConkey agar. Rectal swabs were taken from 302 distinct patients for screening for CPE. The material on each rectal swab was dispersed and suspended in 0.5 ml of 0.85% saline to generate a homogenous suspension of faecal material. Aliquots of this suspension (50 µl) were used to inoculate chromID CARBA, chromID OXA-48 and 5 ml TSB containing a 10 µg ertapenem disc. All media were incubated at 37°C for 18-20 h. After incubation, the broth was mixed and a 10 µl aliquot was inoculated onto MacConkey agar which was then incubated overnight at 37°C. Any suspect isolates of Enterobacteriaceae isolated on any of the three media were screened for possible carbapenemase production in accordance with UK national guidelines using the KPC, MBL & OXA48 confirm ID kit (Rosco Diagnostics). Any isolates showing phenotypic evidence of carbapenemase production were investigated using PCR for the five most common carbapenemase genes (OXA-48, KPC, VIM, IMP and NDM-1).

Results: A total of 33 patients (11%) were found to be colonized with CPE and 34 isolates of CPE were recovered in total with *Klebsiella pneumoniae* by far the most dominant species (*n* = 31). All 34 isolates of CPE were confirmed as harbouring OXA-48 carbapenemase as confirmed by PCR. There was no phenotypic or genotypic evidence of other carbapenemase-types. Fifty eight percent of colonized patients were detected using MacConkey agar after enrichment in broth plus ertapenem (CDC method) compared with 76% using chromID OXA-48 and 56% using chromID CARBA. Four false positive isolates were recovered as coloured colonies on chromID OXA-48 compared with two on chromID CARBA and 18 false positive lactose fermenters on MacConkey. Using a combination of the two chromogenic media resulted in detection of 30 patients (sensitivity 91%) whereas a combination of chromID OXA-48 and the CDC method allowed detection of one additional patient (sensitivity: 93.9%).

Conclusion: In an area where OXA-48 is the dominant carbapenemase type, chromID OXA-48 offers a superior sensitivity to the routinely used CDC method and allows results to be generated one day earlier as no broth enrichment is required. chromID OXA-48 is also highly specific and only two false positive isolates were recovered from 302 patients. Sensitivity may be improved by combining the use of this medium with either chromID CARBA or the CDC-recommended method.