P0687
Paper Poster Session
Antimicrobial resistance in anaerobes

Evaluation of cfiA gene positive and negative Bacteroides species with Carba NP test

Isin Akyar*[1], Meltem Kaya[2], Onur Karatuna[1]

[1]*Acibadem University Shool of Medicine, Dept. of Microbiology, Acibadem Labmed Medical Laboratories, Istanbul, Turkey*

[2]*Acibadem Labmed Medical Laboratories, Istanbul, Turkey*

Background: *Bacteroides* spp. are the predominant components of the human intestinal flora and can cause serious infections. Carbapenems are widely used for the treatment of anaerobic infections, however production of carbapenemases by *Bacteroides* spp. renders these antimicrobials ineffective. The detection of carbapenemase activity in *Bacteroides* spp. by microbiology laboratories might be helpful to guide treatment regimens. In this study, our aim was to investigate carbapenemase-production in clinical *Bacteroides* isolates both by phenotypic and genotypic methods.

Material/methods: A total of 24 *Bacteroides* species; *B. fragilis* (n=17), *B. thetaiotaomicron* (n=3), *B. caccae* (n=2), *B. vulgatus* (n=2) collected over a three-year period between 2012 and 2015 were included in this study. The specimen type distribution of those isolates was as follows: blood (n=10), abscess (n=5), periton (n=2), other (n=7). The minimum inhibitory concentration (MIC) for imipenem was determined with gradient strips (Oxoid, UK) according to the manufacturer's recommendations. *B. fragilis* ATCC 25285 was used as a control in antimicrobial susceptibility testing. The presence of the carbapenemase-coding gene *cfi*A was investigated by an in-house polymerase chain reaction (PCR) test. A *Bacteroides fragilis* strain with documented *cfi*A positivity was used as a control strain in PCR tests. Carba NP test was performed according to CLSI recommendations.

Results: Imipenem MIC results were found to be between 0.03 and ≥32 µg/mL. 21 out of 24 strains (87.5%) were found susceptible to imipenem (MIC ≤ 2µg/mL), one strain showed intermediate resistance (MIC=4 µg/mL) and two of the strains were found resistant to imipenem (MIC ≥16 µg/mL). The *cfi*A gene was detected in three *B. fragilis* blood isolates with imipenem MIC ≥4 µg/mL. A correlation between imipenem MIC being ≥4 µg/mL and *cfi*A gene positivity was observed for the tested *Bacteroides* isolates.
Carba NP test results were achieved in 2 hours in clinical isolates and in 30 minutes for the reference strain. The two clinical strains with imipenem MIC ≥32 µg/mL and the reference *cfi*A positive strain were tested positive in the Carba NP test, however the imipenem intermediate (MIC=4 µg/mL), *cfi*A positive strain was found negative.
Conclusions: Among our study *Bacteroides* spp. isolates we determined the rate of imipenem nonsusceptibility as 12.5%. Detection of *cfi*A gene by PCR showed a good correlation with imipenem MICs ≥4 µg/mL. For the detection of carbapenemase-production with Carba NP test, however, only isolates with imipenem MICs ≥32 µg/mL gave positive results. Although further investigation is needed, with our preliminary results, we can suggest that Carba NP test can be used as a rapid carbapenemase detection test for *Bacteroides* species.