DETECTION OF CARBAPENEMASE PRODUCTION IN PSEUDOMONAS AERUGINOSA IN A TERTIARY CARE CENTRE

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AIM

- *Pseudomonas aeruginosa* is a major cause of nosocomial infections and can be difficult to treat due to a wide range of both intrinsic and acquired resistance mechanisms.
- The goal of this study was to identify the prevalence of carbapenemase production among meropenem non-susceptible *P. aeruginosa* strains in the University Hospitals Leuven using two commercial assays.

MATERIAL AND METHODS

- Meropenem susceptibility of *P. aeruginosa* in UZ Leuven was determined using the VITEK 2 system.
- Between October 2018 and March 2019 all meropenem non-susceptible *P. aeruginosa* strains from clinical samples were included.
- Carbapenemase production in these strains was determined using two commercial assays:
  - KPC/MBL in Pseudomonas/Acinetobacter combined disk test (Rosco Diagnostica, Taastrup, Denmark)
  - RESIST-4 O.K.N.V. immunochromatographic lateral flow assay (Coris BioConcept, Gembloux, Belgium)

RESULTS

- Over a 6 month period 109 meropenem non-susceptible *P. aeruginosa* strains were collected from 97 different patients.
- 63 strains were meropenem resistant, 46 strains showed intermediate susceptibility according to EUCAST breakpoints.
- All strains were analyzed with the combined disk test, meropenem resistant strains also with the lateral flow assay.
- All carbapenemase positive strains were meropenem resistant.
- No carbapenemase positive strains were found among cystic fibrosis patients.
- No relation was found between patients with carbapenemase producing strains as to time of sampling or hospitalization ward.

CONCLUSIONS

- 109 meropenem non-susceptible *P. aeruginosa* strains were analyzed of which 10 (9,2%) produced a carbapenemase. 9 VIMs and 1 NDM were identified.
- The KPC/MBL in Pseudomonas/Acinetobacter combined disk test and RESIST-4 O.K.N.V. lateral flow assay showed excellent concordance for the detection of carbapenemase producing *P. aeruginosa*.