

eP601

ePoster Viewing

MDR Enterobacteriaceae - a major threat

MATRIX-ASSISTED LASER DESORPTION/IONIZATION-TIME OF FLIGHT MASS-SPECTROMETRY (MALDI-TOF) BASED TYPING OF ESBL ESCHERICHIA COLI DURING A HOSPITAL OUTBREAK

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Objectives:

Rapid and specific identification to subspecies level and determination of strain-identity are integral components of outbreak investigation and infection control. Conventional methods employing pulsed-field gel electrophoresis (PFGE) are labour intensive and require up to one week from sample collection to delivery of pathogen typing results. Although MALDI-TOF is able to identify bacterial species, the value for epidemiological typing on subspecies level is not explored in details. We aimed to assess the validity of MALDI-TOF for detection of strain identity as compared to PFGE in ESBL-producing *E.coli* during a hospital outbreak.

Methods:

ESBL *E.coli* isolates from one previously published report from our institution were sub-cultured and analysed using MALDI-TOF (Biotyper, Bruker Daltonik). The spectra profiling was repeated three independent times and analyzed using principal component analysis (PCA) to generate a dendrogram. We compared the results of MALDI-TOF typing with PFGE findings.

Results:

Eight strains collected during an outbreak investigation in the neonatal care unit were analysed. PFGE has identified the transmission of ESBL *E.coli* from a mother to her newborn twins and subsequent spread to two other neonates and one healthcare worker. Whereas, two isolates of EBSL *E. coli* were not associated with the outbreak. In comparison to PFGE, PCA-based typing with MALDI-TOF spectra reproduced a very similar pattern with identical clustering of the six outbreak isolates. In addition, MALDI-TOF correctly separated the two non-associated isolates.

Conclusions:

These preliminary results demonstrate that MALDI-TOF could provide a promising tool to rapidly and accurately type ESBL-producing *E. coli* during an outbreak. Our findings may have important implications for outbreak investigations, which are hampered by the long turn-around time of PFGE results.