

O262

2-hour Oral Session

Dealing with *Clostridium difficile*

A national survey for the molecular epidemiology of *Clostridium difficile* in Israel: the dissemination of the ribotype-027 clone with frequent non-susceptibility to vancomycin and metronidazole

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Objectives: Little is known about the prevalence of the epidemic *Clostridium difficile* BI/NAP1/027 clone and other emerging strains in Israel and the Near East. Our goals were to study the molecular epidemiology of *C. difficile* strains in Israel and the antimicrobial susceptibilities of these strains.

Methods: This was a prospective national survey conducted in January-February 2014. Microbiology labs serving 6 general hospitals (GH) across Israel (covering 30% of Israel's acute-care hospital beds), as well as long-term care facilities (LTCF) were asked to submit all adult stool samples that were tested positive for *C. difficile* toxins. Toxigenic cultures were performed in an anaerobic chamber and identification of *C. difficile* was done based on morphologic characteristics and PCR for the species-specific gene, *tpi*. Antimicrobial susceptibility testing was done for vancomycin, metronidazole and moxifloxacin using gradient method. Criteria for susceptibility were determined according to the EUCAST recommendations. The presence of *tcdA* & *tcdB* genes was tested by PCR. Identification of the epidemic strain (BI/NAP1/027, *slpA* type gc8) was screened by PCR for the 18-bp deletion in the *tcdC* gene and the *cdtB* gene and confirmed by PCR Ribotyping. Non-027 isolates were typed by PCR and sequencing of the variable region of the *slpA* gene and also by Ribotyping (whenever a corresponding reference strain was available). Designation of *slpA* types was done based on the nomenclature used by Kato.

Results: *C. difficile* isolates were recovered in 211 out of 217 samples (97.2%), of which 50 (23.6%) were from 10 LTCF's. Ribotype 027 was the most common type overall, identified in 65 samples (31.8%). Ribotype 027 was identified in all except one center, and was the predominant strain in the 3 GH with the highest incidence of *C. difficile* infections (CDI) as well as in LTCF's. Other common strains were *slpA* types cr-02 (n=45), hr-02 (n=19), and hr-05 (Ribotype 014, n=13). The rates of vancomycin MIC values >2 mg/L were high in the 2 most common strains, 027 (57/65, 87.7%) and cr-02 (40/45, 88.8%). Similarly, the rates of metronidazole MIC values >2 mg/L were 29/65 in the 027 strains (44.6%) and 8/45 in the cr-02 strains (17.8%).

Conclusions: This study demonstrates that the epidemic clone, Ribotype 027, characterized by diminished susceptibility to vancomycin and metronidazole, has disseminated across Israel and is now the most common clone, especially in centers with high incidence of CDI.