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Abstract (eposter session)

Clonal expansion of Acinetobacter baumannii strains displaying elevated tigecycline minimum inhibitory concentration (MIC) values responsible for increasing resistance rates in Latin America

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Objective: To evaluate the high prevalence of Acinetobacter spp. (ASP) displaying elevated tigecycline MICs (>2 mg/L) in Latin American (LATAM) hospitals surveyed by the SENTRY Programme. We recently noted a significant difference in the percentage of ASP with tigecycline MICs >1 mg/L in LATAM compared to other geographic regions of the world (87.5% vs. 93.4-96.1%). Methods: 1,950 ASP were received from LATAM during 2005-2011-period (9 hospitals from 2005 to 2010 and 20 in 2011). Isolates were susceptibility tested according to CLSI guidelines. A. baumannii (ACB) isolates from 2011 displaying tigecycline MIC values >2 mg/L were molecular typed by PFGE. Expression of adeA and adeF encoding the efflux pumps AdeABC and AdeFGH was determined for 18 unique isolates from 2011 using high quality DNA-free RNA preparations and measured by quantitative RT-PCR, normalized using rpoB and compared to ACB ATCC 19606. Results: ASP displaying tigecycline MIC values >1 mg/L varied from 6.9 to 32.2% in the study period and showed an increase from 14.6% in 2010 to 32.2% in 2011 ($p< 0.0001$; OR=0.16[0.09-0.28]). Isolates with confirmed tigecycline MIC values >2 mg/L were 49 A. baumannii and 1 A. pittii (formerly genomic species 3; by MALDI-TOF). Isolates were mainly from Sao Paulo, Brazil (SP; 29 isolates) and Guadalajara, Mexico (14), but also from Durango, Mexico (3), Florianopolis, Brazil (1), Panama City, Panama and Santiago, Chile (1). PFGE showed that 15/29 isolates from SP belonged to a single clone. Three other clusters were noted in the same hospital (5, 3 and 2 isolates). Ten strains from Guadalajara belonged to a major clone and the remaining 4 strains belonged to two other PFGE types. All three strains from Durango were genetically related. Expression results of AdeABC and AdeFHG tested for 18 strains with MIC values ranging to 1 to 8 mg/L showed that only two isolates had significantly greater expression of AdeFGH (>10-fold difference from the control ATCC strain) both from clonal groups from SP and displaying tigecycline MIC values of 4 mg/L. All strains had AdeABC expression similar to the control strain. Conclusions: We documented the recent increase of ASP displaying elevated tigecycline resistance in LATAM hospitals, dominantly due to the clonal expansion of isolates in Brazil and Mexico. Control of tigecycline usage in those countries and more restrict infection control practices in the involved centres will be needed to contain these ACB outbreaks.