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Paper Poster Session

Emergence and worldwide outbreaks of carbapenemase-producing bacteria

Emerging extensively drug-resistant bacteria (eXDR) in an Algerian emergency hospital: characterization and recommendations

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Background: Emerging Extensively Drug Resistant Bacteria (eXDR) posing a serious worldwide menace to public health. We bring in this study the frequency and molecular characteristics of eXDR in our hospital during the years 2012-2014. We relate recommendations for the prevention of eXDR cross-transmission.

Material/methods: A prospective study was conducted over a period of 3 years (January 2012 to December 2014); we collected 551 strains of *Klebsiella pneumoniae*, 257 strains of *Enterobacter cloacae* and 201 strains of *Enterococcus* spp. These isolates were recovered from different clinical samples providing from different departments of the hospital. Antimicrobial susceptibility was performed by diffusion method on agar medium and performed as recommended by the CLSI. Isolates were further subjected to minimum inhibitory concentration (MIC) testing to carbapenem or vancomycin using the gradient strip E test. Enterobacteriaceae with reduced susceptibility to ertapenem were tested for carbapenemases by modified Hodge test (MHT) and the test with EDTA. Phenotypic search ESBL was carried out by the double-disc method. For *Enterococcus* spp a screening test for vancomycin (6µg/ml) was done. A multiplex PCR was realized for detection of carbapenem and glycopeptides resistance genes

Results: At the end of our study we found eXDR: *K.pneumoniae* 0.55% (3/551), *E.cloacae* 0.39% (1/257) producing carbapenemases and only one strain of *E.faecium* resistant to glycopeptides 0.5% (1/201). The MIC (µg/ ml) for imipenem obtained ranged between 0.19 and 2, ertapenem between 0.75 and 24 and vancomycin 256. MHT was positive for all strains. All of these eXDR were isolated during 2014 which confirms this emerging phenomenon.

The Molecular test showed that all carbapenemases were due to the presence of *bla*_{oxa-48} gene alone and glycopeptide resistance was due to the presence of the gene *vanA*.

Conclusions: This study demonstrates that the eXDR, although rare, exist well in our hospital and emerged during year 2014. Several departments are concerned by this phenomenon.

The carriage of eXDR has been detected from a clinical sample after few hospital days. No contact isolation was prescribed at the admission. Therefore standard precautions regard to all health professionals caring for any patients and additional barrier precautions (isolation) for patients carrying eXDR are strongly recommended.