

O280

Abstract (oral session)

Emergence of linezolid-resistance in *Staphylococcus epidermidis*, mediated by a rare 23S rRNA mutation (T2504A), in intensive care units patients

M. Grare*, K. Ouhammou, B. Riu, B. Georges, O. Cointault, E. Bouvet, L. Cavalie, O. Dumitrescu, H. Meunier, M.-E. Reverdy, M. Archambaud, F. Laurent (Toulouse, Lyon, FR)

Objectives: Linezolid (LZD) is used exclusively in severe infections against Gram-positive pathogens. LZD resistance is usually mediated by the presence of mutations in the 23S rRNA target, or by the *cfr* gene. Here we described the emergence of a linezolid-resistant *Staphylococcus epidermidis* (LRSE) clone in intensive care units (ICU) (CHU Toulouse, France). The aim of this study was to analyse the mechanism of resistance and the clonal link between strains. **Methods:** Between January 2009 and July 2012 we retrospectively identify 29 infection or colonization events; 23 isolates were available and sent to the National Reference Centre (CNR) for Staphylococci for LZD resistance mutation and clonal relatedness analysis. Thirty LZD-susceptible *S. epidermidis* collected at the same period were also analyzed as control. The medical records of the patients were reviewed. LZD utilization data were obtained from the pharmacy. **Results:** All patients were hospitalized in ICU during 50 days (mean, range 5 to > 100). The patient age was 64.8 years (mean, range 40-79) and sex ratio M/F was 2.63. Twenty five (86%) patients underwent mechanical ventilation, 22 (76%) invasive procedure and 13 (45%) were dialysed. All documented patients (n=26; no data for 3 patients) received LZD before LRSE collection (23 by IV, 3 by oral route, posology 600 mg 2x/day), for 14 days (median, range 4-26), in association with other antibiotics. LRSE were isolated from blood culture (79%), wound (14%), urine (10%), peritoneal fluid (3%) or pleural fluid (3%). All isolates were methicillin-resistant, with high teicoplanin MIC (≥ 16 mg/L) and high LZD MIC (> 256 mg/L). LZD-resistant isolates were confirmed as clonally related *S. epidermidis*; all LZD-susceptible *S. epidermidis* strains belonged to other clones. Partial 23S rRNA gene sequencing found a rare T2504A mutation in all of the resistant isolates tested. **Conclusion:** Here we described a rare resistance mutation (T2504A) in clonally-related LZD-resistant *S. epidermidis*, emerging in hospital LZD-pressure context. Interestingly, all the LZD-susceptible strains isolated at the same time, belonged to other different clones. Some isolates belonging to the same resistant clone has been detected in other distant French hospitals. Investigation of epidemiological link is underway. The emergence of this clone raises many questions on the use of LZD and the surveillance of patients with LZD treatment, and represents significant therapeutic challenges.