

R2517

Abstract (publication only)

**Prevalence and mechanism of carbapenem resistance in *Acinetobacter baumannii* isolates from Thailand**

T. Chatsuwana\*, P. Samarthai (Bangkok, TH)

**Objectives:** To investigate the prevalence of carbapenem resistance and mechanism of carbapenem resistance in *A. baumannii*. **Methods:** A total of 200 *A. baumannii* isolated from King Chulalongkorn Memorial Hospital during May 2008 to April 2009 were included in this study. Antimicrobial susceptibility testing of imipenem and meropenem was determined by agar dilution method. Oxa-type carbapenemase and metallo-beta-lactamase genes were determined by PCR. The presence of ISAbal, ISAbal2 and ISAbal3 upstream the blaOXA-like genes was detected by PCR and DNA sequencing. Carbapenem efflux pump was determined by using CCCP, the efflux pump inhibitor. The loss or decrease of outer membrane protein (OMP) was analysed by SDS-PAGE. **Results:** The prevalence of imipenem and meropenem resistance was both 92.5%. All carbapenem-resistant *A. baumannii* isolates had carbapenemase activity by modified Hodge test. However, metallo-beta-lactamase enzymes by EDTA-disk synergy were not detected in any isolates. The presence of carbapenemase genes including blaOXA-23, blaOXA-24, blaOXA-51, blaOXA-58, blaIMP, blaVIM, blaGIM, blaSPM and blaSIM was screened by multiplex-PCR. Of 185 carbapenem-resistant *A. baumannii* isolates, 182 (98.4%) carried blaOXA-51-like with blaOXA-23-like and 3 (1.6%) had blaOXA-51-like with blaOXA-23-like and blaOXA-58-like. The blaIMP, blaVIM, blaGIM, blaSPM and blaSIM metallo-beta-lactamase genes were not found in any isolates. ISAbal1 was found in the upstream region of blaOXA-23-like in all 25 representative isolates and ISAbal3 was present upstream blaOXA-58-like in all 3 isolates. The efflux pump inhibitor, CCCP, could not reduce the MIC of imipenem and meropenem equal or more than 4-fold. The result showed no efflux pump mechanism in all of the carbapenem-resistant isolates. The reduction of 43 kDa OMP was detected in 2 of the 10 representative carbapenem-resistant *A. baumannii* isolates. **Conclusion:** High resistance rate of carbapenems was found in *Acinetobacter baumannii* isolates from Thailand and carbapenem resistance mechanism was attributed to the production of OXA-23 carbapenemases and the decrease of 43 kDa OMP. ISAbal1 and ISAbal3 play an important role in the expression of the blaOXA genes in our isolates.