



Major resistance problems in Far East Asia

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During the past century, the development of new antimicrobial agents has become the most successful strategy used for fighting the continuous emergence of antimicrobial resistance in bacterial pathogens. However, the extensive use of these compounds and rapid evolution of resistance mechanisms have increasingly limited the efficacy of this approach. The investigation of trends and changes in bacterial pathogens and the emergence of resistance among them are very important for the successful of the empiric therapy for infectious disease. In the nosocomial setting, outbreaks and prolonged epidemic due to multi-drug resistant (MDR) organisms mocking the effectiveness of current antimicrobial agents are increasing recognized. Formerly, multiple-drug resistant strains were major pathogen of the nosocomial infection, but many pathogens of community-acquired infection tend to multiple resistant for antimicrobial agents recently. In addition, the number of antimicrobial agents expected to enter clinical practice during the years to come is dramatically lower than the number launched during the 1970s and 1980s hence making it more difficult to control at short and medium term the future resistance scenario. There are several reasons for the recent decline in the number of newly marketed antimicrobial agents. In the first place, most of the easy targets allowing selective toxicity for antimicrobials have been discovered. Moreover, it is increasingly costly to bring a new antimicrobial agent to the market. The major reason for escalating price for carrying out the clinical trials necessary to validate the effectiveness of new agents.

Resistance of bacteria to antimicrobial agents is a worldwide concern. In Japan, resistant bacteria are more prevalent than in other industrialized countries. Methicillin-resistant *Staphylococcus aureus* (MRSA), penicillin-intermediate-resistant and -resistant *Streptococcus pneumoniae* (PISP and PRSP), β -lactamase-non-producing ABPC resistant (BLNAR) and β -lactamase-producing ABPC resistant (BLPAR) strains of *Haemophilus influenzae*, fluoroquinolone-resistant *Escherichia coli* and multi-drug resistant *Pseudomonas aeruginosa* are examples

of resistant bacteria prevalent in Japan. However, the incidence of vancomycin-resistant *Enterococci* (VRE) and carbapenem-resistant *Acinetobacter baumannii* were very low in Japan, but several outbreaks of nosocomial infections infected these organisms were reported recently.

In order to investigate trends and changes in bacterial pathogens and emergence of resistance, the Japanese Society of Chemotherapy (JSC) established a nationwide surveillance network in 2006. Dr. Niki reported the results of the surveillance during the period from January to August 2007. A total of 1178 strains were collected from clinical specimens obtained from adult patients with respiratory tract infections. The incidence of MRSA was high, at 59.7%, and the incidences of PISP and PRSP were 30.4% and 5.1%, respectively. Among *Haemophilus influenzae* strains, 19.9% of them were found to be β -lactamase-non-producing ABPC-intermediately-resistant (BLNAI), 29.1% to be BLNAR, and 6.7% to be β -lactamase-producing ABPC resistant (BLPAR) strains. Only two (1.2%) of *Pseudomonas aeruginosa* were found to be metallo- β -lactamase-producing strains, including only one (0.6%) suspected MDRP.

The carbapenem resistant Gram-negative bacilli are increasing in Japan and nosocomial infections of these bacterial become a serious clinical problem. Dr. Yamaguchi and the Meropenem Surveillance Group was reported the Meropenem susceptibility surveillance data was performed between 2002 and 2006 in Japan. Meropenem resistant against *Pseudomonas aeruginosa* was nearly constant at about 10% during the test period. The incidence of MDRP was stable (1.6-3.6%) during the test period. The susceptibility rate of *Acinetobacter* spp. to Meropenem was 96.4% to 98.0%. Carbapenem-hydrolyzing OXA-type β -lactamase-producing multidrug resistant *Acinetobacter baumannii* are becoming a serious problem in Europe. Fortunately, carbapenem-resistant *Acinetobacter baumannii* is not increasing in Japan. And also Meropenem-resistant *Klebsiella pneumoniae* were not detected in this survey.