Complicated UTI caused by beta-lactamase producing gram-negative bacteria

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Fluoroquinolones and new oral cephems (such as cefteram, cefdinir, cefpodoxime, cefditoren, and cefcapene) are well established in the treatment of complicated urinary tract infections. However, the appearance of resistant isolates to these antimicrobials is a serious clinically problem. With widespread use of beta-lactams, resistance to not only penicillins but also cephalosporins has been increasing. Beta-lactamase production is the mainly mechanism of resistance to beta-lactams. In European countries gram-negative organisms produced extended-spectrum beta-lactamases (ESBLs) have been causing clinical problem. In Japan, isolation of ESBLs producing strains are rare, and the isolation frequency of ESBLs producing strains is less than 1% in Escherichia coli and Klebsiella pneumoniae. But recently the tendency of increasing ESBLs producing isolates has reported in Japan. In our area, Kitakyushu Japan, before 1998 ESBLs producing strains were not isolated, in 1998 1 strain, in 1999 about 20 strains, and in 2000 about 50 strains were isolated. In European countries TEM type and SHV type ESBLs have been mainly reported, and in Korea TEM-52 and SHV-12 type ESBLs have been reported. In Kitakyushu Japan most of ESBLs types are UOE-2 (CTX-M-14), and CTX-M-2, CTX-M-3, and UOE-1 (CTX-M-3 like beta-lactamase) have been isolated. TEM type and SHV type ESBLs have been isolated in Kitakyushu, but these types of ESBLs were only a few. In Kitakyushu, most of ESBLs producing organisms were E. coli, the other organisms were K. pneumoniae, Citrobacter freundii, Citrobacter koseri, Enterobacter cloacae, Serratia marcescens, and Proteus mirabilis. These ESBLs producing isolates were resistant to all oral cephalosporins, and more serious problem is that the most of these

isolates ()90%) were high resistant to fluoroquinolones. In Japan the other beta-lactamases causing clinical problem is IMP-1 type of metallo-beta-lactamase. The mainly organisms producing metallo-beta-lactamases were Serratia marcescens, Pseudomonas aeruginosa, Alcaligenes spp.. The other isolated organisms producing were E. coli and Providencia rettgeri. Although the isolation frequency of this type of beta-lactamase producing isolates was low (less than 1% in 2000).. there are no antimicrobial agents to be susceptible to S. marcescens or NFGNR (especially P. aeruginosa) with metallo-beta-lactamase. It is serious problem to treat with urinary tract infection. I will give these beta-lactamase producing isolates from patients with complicated urinary tract infection and clinical cases caused by these beta-lactamase producing strains in Kitakyushu Japan.