Double carbapenem therapy for carbapenem-resistant Klebsiella pneumoniae bacteraemia

Uğur Önal¹, Ayse Uyan¹, Günel Guliyeva¹, Deniz Akyol¹, Oguz Resat Sipahi*¹

¹Ege University Faculty of Medicine, Infectious Diseases and Clinical Microbiology, Izmir, Turkey

Background: In this study our aim was to describe the outcomes of patients with blood stream infections with carbapenem resistant *Klebsiella pneumoniae* (CRKP) who received ertapenem containing double carbapenem therapy (ECDCT) retrospectively.

Materials/methods: This study was performed at a tertiary-care educational university hospital. Adult (>18 years old) patients with culture proven CRKP bacteraemia treated with double carbapenem regimen between Aug 2016 to Oct 2017 were included in the study. Blood cultures were performed on Bact-Alert (Bio Merioux, France). Antimicrobial susceptibility testing of the isolates was performed with the VITEK 2 system (bioMérieux). Resistance to imipenem, ertapenem, and meropenem was tested by E-test (bioMérieux). The results were interpreted according to the EUCAST criteria. Ertapenem dosage was adjusted as creatinine clearance as >30 1 gr/day (7 cases); <30 0.5gr/day (5 cases) while meropenem dosage was 3x1 gr/day when creatinine clearance >50 (5 cases), 2x1gr/day when 10-50 (5 cases) and 2x500mg/day <10 (1 case).

Results: There were a total of 11 cases fulfilling study criteria. Male/female ratio was 9/2 (mean age 54.18±18.40 years). Nine cases had concomitant CRKP urinary tract infections and history of urological operation. Seven cases had a history of antibiotic usage in the previous one month period. All of the isolates were resistant to meropenem and ertapenem with the MIC levels ≥ 16 and ≥8 μg/ml, respectively. Five isolates were resistant to colistin and nine isolates were also resistant to gentamycin. Five isolates were found to be sensitive (MIC ≤ 2 μg/ml) and one isolate was intermediately sensitive (MIC=4 μg/ml) to tigecycline. All of the cases were treated with ECDCT. In 6 cases ECDCT was combined with colistin and combined with tigecycline in 4. Mean duration of ECDCT was 15.5 +/- 4.5 days. Microbiologic eradication was observed in all cases within a mean of 6 days. Overall one-month survival rates (with one relapse and one reinfection (with Enterococci)) were 90.9% (10/11) and one case died due to hepatic encephalopaty and multiple organ failure while waiting for liver transplantation.

Conclusions: Although the number of cases is low and uncontrolled, ECDCT containing therapy resulted in relatively high successful outcome in CRKP bacteraemia.