Tigecycline in the treatment of multidrug-resistant (MDR) Acinetobacter baumannii meningitis: a review of 21 cases

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Background: In this multicenter study we retrospectively reviewed A. baumannii meningitis cases treated with tigecycline including regimens, retrospectively.

Material/methods: This study was performed in seven tertiary-care educational hospitals from five cities of Turkey (Izmir, Ankara, Adana, Canakkale, Diyarbakir). We extracted data and outcomes of all adult (aged>18) patients with culture proven A. baumannii meningitis treated with tigecycline including antibiotherapy between January 2006 and September 2015. Demographic, clinical and laboratory
findings, predisposing factors, as well as information on response to treatment and outcome were obtained retrospectively. A definite diagnosis of meningitis was based on the isolation of *A. baumanii* in at least one CSF culture. Typical CSF findings included a leukocytosis (≥250 leukocytes/ml, with a predominance of polymorphonuclear cells and classic clinical manifestations of meningitis. CDC criteria were used to define nosocomial meningitis. CSF samples were obtained by lumbar puncture or percutaneous aspiration of shunt reservoir or puncture of extra ventricular drainage tubing. Samples were routinely centrifuged and the pellet was gram stained. *A. baumannii* isolates were identified using routine microbiological methods. Antibacterial susceptibility tests were performed using the Kirby-Bauer disk diffusion method as described by the Clinical Laboratory Standards Institute (CLSI). For tigecycline susceptibility FDA criteria were used.

**Results:** A total of 21 patients (Fifteen male and six female) fulfilled our inclusion criteria. Nineteen of 21 cases had fever. Eighteen cases had disturbance. Eighteen patients had leukocytosis. Three cases did not have leukocytosis but had polymorphonuclear leukocyte predominance. All cases had CSF pleocytosis (Range 280-3450/mm³). CSF protein level was 226 ± 141 mg/dl, glucose level was 21 ± 10 mg/dl. All Acinetobacter strains were carbapenem-resistant (Only two intermediately-resistant) Seventeen strains were susceptible to tigecycline, four were intermediately susceptible to tigecycline. Fifteen strains were susceptible to colistin whereas in six strains colistin susceptibility was unknown. Six strains were susceptible to netilmicin and four to amikacin. All cases had received at least one extended-spectrum antibiotic in the previous month (meropenem or vancomycin or cephalosporin or piperacillin/tazobactam or linezolid) for several nosocomial infections. Tigecycline dosage was 50 mg q12h in all cases. Six cases received tigecycline monotherapy whereas 15 combination therapy (7 with colistin, 4 with netilmicin, 4 with amikacin 1 with meropenem), Eight of 21 cases were lost during the hospital stay (1 in monotherapy, 4 in colistin, 2 in netilmicin, 1 amikacin, p>0.05). Cerebrospinal fluid tigecycline level was not known in all cases.

**Conclusions:** To our knowledge this the largest series regarding tigecycline in Acinetobacter central nervous system infections. Our experience with tigecycline suggests that it can be an alternative in the salvage treatment of nosocomial meningitis with multiresistant *Acinetobacter spp.*