

Ceftazidime-avibactam

Ceftazidime-avibactam (CZA) is a novel **antibiotic** with activity against serine-lactamase. Chen et al. investigated the **sensitivity** of **carbapenem-resistant Klebsiella pneumoniae** (CRKP) to CZA and the mechanisms of drug resistance in Fujian Provincial Hospital, Fuzhou, China.

Patient characteristics were obtained from medical records. *Klebsiella pneumoniae* and its antibiotic susceptibility were determined using the Vitek-2 Compact instrument. The antimicrobial resistance genes KPC, NDM, OXA-48, VIM, IMP, CIM, SPM, TMB, SMB, SIM, AIM, and DIM were detected using Real-Time PCR. Multilocus sequence typing was used for genetic RELATEDNESS analysis. In total, 121 CRKP strains were isolated from patients in the intensive care unit (51.2%), senior ward (12.4%), and neurosurgery department (10%). With an average age of 72.5 years, most patients were in care for respiratory (34.7%), brain (20.7%), digestive tract (13.2%), and cardiovascular (8.3%) diseases. Specimens were predominantly obtained from sputum (39.67%), urine (29.75%) and blood (6.61%).

Of 23 CZA-resistant CRKP strains (19.01%), ST11 being the most common at 56.52%, eleven NDM-1-positive (47.83%) and four NDM-5-positive (17.39%) strains were detected.

The study indicates that CZA resistance occurs in ~19.01% CRKP strains and that blaNDM-1 and blaNDM-5 might be critical for resistance ¹⁾.

3 patients diagnosed with MDR/XDR Gram-negative bacillus-associated CNS infections and effectively treated with CAZ/AVI. Moreover, we performed literature reviews. Before the onset of CNS infections, the 3 patients were subjected to neurosurgical operations, treated with mechanical ventilation, long-term intensive care unit therapy, and various antibiotics. By intravenously administering CAZ/AVI, combined with another antibiotic, the MDR/XDR *K. pneumoniae* and *P. aeruginosa* associated ventriculitis was effectively treated in the 3 patients.

CAZ/AVI is a viable treatment option for CNS infections caused by MDR/XDR Gram-negative bacteria ²⁾.

A man with ventriculitis caused by *P. aeruginosa* and carbapenem-resistant *K. pneumoniae* was successfully treated with i.v. ceftazidime-avibactam and intrathecal amikacin ³⁾

Pektezel MY, Isikay I, Gocmen R, Inkaya AC. Carbapenem-resistant *Klebsiella pneumoniae* meningitis and abscess treated with ceftazidime-avibactam. *Enferm Infecc Microbiol Clin (Engl Ed)*. 2021 Apr 12:S0213-005X(21)00083-5. English, Spanish. doi: 10.1016/j.eimc.2021.03.014. Epub ahead of print. PMID: 33858707.

Holyk A, Belden V, Lee JJ, Musick W, Keul R, Britz GW, Lin J. Ceftazidime/avibactam use for carbapenem-resistant *Klebsiella pneumoniae* meningitis: a case report. *J Antimicrob Chemother*. 2018 Jan 1;73(1):254-256. doi: 10.1093/jac/dkx358. PMID: 29040635.

1)

Chen D, Liying X, Hong D, Zhao Y, Hu X, Shi S, Chen F. Epidemiology of resistance of carbapenemase-producing *Klebsiella pneumoniae* to ceftazidime-avibactam in a Chinese hospital. *J Appl Microbiol*. 2021 May 30. doi: 10.1111/jam.15166. Epub ahead of print. PMID: 34053144.

2)

Zhou Q, Wang H, Zhan T, Yang X, Wen L. Successful Treatment of Ventriculitis Caused by MDR/XDR Gram-Negative *Bacillus* Using Ceftazidime/Avibactam: Case Series and Literature Review. *Infect Drug Resist*. 2021 May 5;14:1691-1701. doi: 10.2147/IDR.S306222. PMID: 33981150; PMCID: PMC8107005.

3)

Gofman N, To K, Whitman M, Garcia-Morales E. Successful treatment of ventriculitis caused by *Pseudomonas aeruginosa* and carbapenem-resistant *Klebsiella pneumoniae* with i.v. ceftazidime-avibactam and intrathecal amikacin. *Am J Health Syst Pharm*. 2018 Jul 1;75(13):953-957. doi: 10.2146/ajhp170632. PMID: 29941534.

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