CEFTAZIDIME-AVIBACTAM PLUS AZTREONAM IN MULTIDRUG-RESISTANT BACTERIAL INFECTIONS: EFFECTIVENESS, MORTALITY AND OUTCOME PREDICTORS

Authors:

Calvo García, A[1]

Ruiz García, S[1]

Ibáñez Zurriaga, A[1]

Sáez Béjar, CM[2]

Pérez Abánades, M[1]

Esther Ramírez Herraiz[1]

Serra López-Matencio, JM[1]

Botica Moros, L[1]

Aranguren Oyarzabal, A[1]

[1]Pharmacy Department

[2]Internal Medicine and Infectious Diseases Department

La Princesa University Hospital

Keys words:

Ceftazidime-avibactam-aztreonam

Multidrug-resistant Gram-negative bacteria

Outcome predictors

Effectiveness

Mortality

Abstract information:

4CPS-113

Contact Data:

Alberto Calvo García

Alberto.calvo@salud.madrid.org

Pharmacy Department

La Princesa University Hospital

Background and Importance

Ceftazidime-avibactam-aztreonam is used to treat infections caused by **MBL-producing Enterobacteriaceae** (Ceftazidime is included due to the unavailability of aztreonam-avibactam until 2025).

Aim and Objectives

To evaluate **the effectiveness, mortality, and outcome predictors** in infections treated with ceftazidime-avibactam-aztreonam.

Materials and Methods

Retrospective study (Jan 2022–Apr 2025).

Patients included: patients with **active infection treated with ceftazidime-avibactam-aztreonam**.

Outcomes: **clinical/microbiological cure, 90-day clinical/microbiological recurrence, early (24–48h), 30-day, and intra-hospital mortality**.

Analysis (M365 Copilot): **Univariate and multivariate logistic regression analyses** were performed. Quantitative data were expressed in mean and SD; qualitative in percentage with 95%CI.

Results

Patients included: 84

Table 1. Sociodemographic profile	
Male gender	61.9% (51.2-72.6)
Age (years)	70.9 (15.0)
Hospital stay (days)	51.8 (45.0)
ICU admission	36.9% (26.2-47.6)
ICU stay (days)	20.2 (36.4)

Table 3. Treatment-related data	
Targeted treatment	84.5% (76.2-91.7)
Treatment duration (days)	7.3 (5.0)
Multi-antibiotic therapy	39.3% (28.6-50.0)

Outcomes

Clinical cure: **82.1%** (73.8-90.5)

Microbiological cure: **56.6%** (45.2-66.7)

90-day relapse rate: **23.7%** (14.5–32.9)

Early mortality: **4.8%** (1.2-9.5)

30-days mortality: **21.3%** (12.5-30.0)

Intra-hospital: **32.1%** (22.6-42.9)

Table 2. Microbiological and infection profile	
Infection Source	
Urinary	38.1% (27.4-48.8)
Respiratory	21.4% (13.1-31.0)
Abdominal	17.9% (9.5-26.2)
Skin and Soft Tissue	8.3% (2.4-14.3)
Endovascular	6.0% (1.2-11.9)
Thoracic	1.2% (0.1-3.6)
Unknown	7.1% (2.4-13.1)
Another infection source	13.1% (6.0-20.2)
Sepsis	33.3% (23.8–44.1)
Polymicrobial infection	45.2% (34.5–56.0)
Carbapenemases	57.6% (47.8-67.4)
OXA-48+NDM	13.0% (6.5-20.7)
VIM	11,9% (3.3-21.7)
OXA-48	8.7% (3.3-15.2)
NDM	5.5% (1.1-10.9)
IMP	2.2% (0.1-5.4)
GES	1.1% (0.1-3.3)
VIM+IMP	

Outcomes predictors

Higher infection cure rates: **Directed treatment** (OR: 4.7; 0.9–25.4; p=0.04).

Lower mortality: **Directed treatment** (OR: 0.3; 0.1–1.2; p=0.04) and **longer hospital stay** (OR: 0.9; 0.9–0.9; p=0.02)

Conclusion and Relevance

Ceftazidime-avibactam-aztreonam showed **high clinical effectiveness** in treating MBL-producing infections**, despite moderate microbiological cure, notable relapse and mortality rates**.

Directed therapy significantly **improved outcomes and reduced mortality**, and **prolonged hospitalization** correlated with **lower mortality**.

These findings support its use while highlighting the need for further research to optimize outcomes and guide individualized treatment strategies.