REAL-WORLD RETROSPECTIVE ANALYSIS OF CEFTAZIDIME-AVIBACTAM PLUS AZTREONAM IN MULTIDRUG-RESISTANT GRAM-NEGATIVE INFECTIONS

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Background and Importance

Multidrug-resistant Gram-negative bacteria (GNB) are a growing global concern due to their increasing prevalence and limited treatment options. One available therapy is **ceftazidime-avibactam-aztreonam** (ceftazidime is used due to aztreonam-avibactam being unavailable until 2025)

Aim and Objectives

To describe **the utilization profile of ceftazidime-avibactam-aztreonam** in the treatment of multidrug-resistant GNB infections.

Materials and Methods

Retrospective study (Jan 2022–Apr 2025).

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

Sociodemographic, clinical/infection-related, and treatment data were collected.

Analysis (M365 Copilot): Quantitative data were expressed in mean and SD; qualitative in percentage with 95%CI.

Results

Patients included: 104

19.2% (11.5-26.9) colonisations

80.7% (73.1-88.5) infections

Table 1. Sociodemographic profile

Male gender	62.5% (52.9-72.1)
Age (years)	68.7 (13.1)
Hospital stay (days)	50.2 (41.3)
ICU admission	32.7% (24.0-42.3)
ICU stay (days)	18.1 (31.1)

Table 2. Infection-associated parameters

Infection Source	
Urinary	30.7% (22.1-39.4)
Abdominal	24.0% (16.3-32.7)
Respiratory	21.1% (13.5-28.8)
Skin and Soft Tissue	6.7% (1.9-11.5)
Endovascular	4.8% (1.0-9.6)
Thoracic	1.2% (0.0-2.9)
Unknown	11.5% (5.8-18.3)
Another infection source	13.5% (7.7–20.2)
Sepsis	28.9% (20.2–37.5)
Polymicrobial infection	45.1% (35.6–54.8)

Table 3. Microbiological profile

Resistance mechanisms	
ESBL+carbapenemase	56.6 (48.2-64.7)
Carbapenemase	29.4 (22.4-37.6)
Multidrug-resistant	6.6 (3.5-12.1)
ESBL	2.3 (0.8-6.3)
ESBL+carbapenemase+AMPc	0.7 (0.1-4.0)
Carbapenem-resistant	0.7 (0.1-4.0)
Ausence	3.7 (1.6-8.3)
Carbapenemase	
OXA-48+NDM	48.3 (39.4-57.3)
VIM	18.1 (12.2-26.1)
IMP	10.3 (6.0-17.2)
OXA-48	9.5 (5.4-16.2)
NDM	6.9 (3.5-13.0)
VIM+IMP	2.6 (0.9-7.3)
VIM+KPC	2.6 (0.9-7.3)
GES	1.7 (0.5-6.1)

Table 4. Treatment-related data

Targeted treatment	83.7% (76.0–90.4)
Treatment duration (days)	7.3 (3.2)
Inappropriate renal dose adjustment	18.3% (11.5–26.0)
Treatment interruption reasons	
Clinical/microbiological cure	51.0% (41.3–60.6)
De-escalation/optimization	24.0% (16.3–32.7)
Negative colonization sample	12.5% (6.7–19.2)
Death	11.5% (5.8–18.3)
Ceftazidime-avibactam-aztreonam resistance	1.0% (0.1–2.9)

Conclusion and Relevance

Ceftazidime-avibactam-aztreonam has been **predominantly used as targeted therapy** in severe infections caused by multidrug-resistant GNB. A high prevalence of complex resistance mechanisms, including **OXA-48 and NDM carbapenemases** was detected.

Despite the clinical complexity, **over half of the patients achieved clinical or microbiological cure**, highlighting the potential effectiveness of this combination. However, the **notable rate of incorrect renal dose adjustments** and its use in MBL-negative Enterobacteriaceae underscores the need for improved antimicrobial stewardship and dosing optimization to maximize therapeutic outcomes and minimize resistance development.