

# Ceftazidime-avibactam for treatment of MDR *Klebsiella pneumoniae* in a child undergone to HSCT: importance of earlier diagnosis and adequate treatment

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## Introduction

The emergence of carbapenem-resistant *Enterobacteriaceae* (CRE) represents a threat to global public health. Several studies have reported that CRE infection is an independent risk factor for mortality, which is likely due to inappropriate initial antimicrobial therapy.

Treatment options for CRE infections are very limited. Polymyxins have been used for the treatment of CRE infection, however, there remain concerns regarding increasing resistance, limited efficacy and toxicity. Ceftazidime-avibactam (CAZ-AVI) is a new β-lactam/β-lactamase inhibitor combination with activity against *Klebsiella pneumoniae* carbapenemases.

## Results

G.G.C., 9 years-old, diagnosed with relapsed Acute Lymphoblastic Leukemia was referred to our service for unrelated allogeneic HSCT. She was admitted in 09/21/2020 with hematopoietic stem cell infusion forecast for 10/02/2020. However, the donor evolved with respiratory symptoms and was diagnosed with COVID-19, being excluded for donation.

As the patient had already started the conditioning regime, it was decided to change the mode of transplantation from unrelated to haploidentical, with the mother being the donor.

On 09/29/2020, the patient evolved with an isolated febrile peak during ATG infusion. Cultures were collected and Meropenem initiated by ESBL colonization. In urine culture there was isolation of carbapenem resistant *Klebsiella pneumoniae*.

The patient evolved with septic shock and antibiotic therapy was expanded to Vancomycin, Polymyxin B and Amikacin, with transfer to the ICU and initiation of vasoactive drug. The patient showed clinical improvement and received hematopoietic stem cells on 10/07/2020, without complications.

However, due to the persistence of fever and release of the final sensitivity of *Klebsiella pneumoniae*, which is also resistant to Polymyxin B, it was decided to suspend Polymyxin B and Amikacin and start Ceftazidime-Avibactam and Aztreonam on 10/10/2020.

Fever improved after 48 hours of antibiotics and she was discharged from the ICU on 10/12/2020. She evolved with recurrence of fever on 10/16/20 and neutrophilic grafting on 10/19/20, with fever associated with the grafting. On 10/20/2020, Ceftazidime-Avibactam and Aztreonam were suspended after 10 days of treatment.

## Conclusions

Early diagnosis of CRE infections and the introduction of new drugs improve patient survival. Few papers are available about these new antibiotics in pediatric population. CAZ-AVI in our case was safe and effective to treat this child, increasing survival and allowing the transplant to be performed.

## References

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## Aim

Our aim was to describe the successful use of Ceftazidime-avibactam for the treatment of septic shock secondary to urinary tract infection by *Klebsiella pneumoniae* in a patient undergoing conditioning for hematopoietic stem cell transplantation (HSCT).

## Methods

- A case description was performed using data from the patient's medical record from Institute of Pediatric Oncology of Federal University of São Paulo.

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