

# Ceftazidime-avibactam in urinary tract infections due to carbapenemase-producing *Klebsiella* in kidney transplantation<sup>☆</sup>

## Ceftazidima-avibactam en el tratamiento de infecciones urinarias por *Klebsiella* productora de carbapenemasa en trasplante renal

Fernando Caravaca-Fontán\*, Sara Jiménez-Álvarez, Roberto Marcén-Letosa, Ana Fernández-Rodríguez Carlos Quereda Rodríguez-Navarro

Servicio de Nefrología, Hospital Universitario Ramón y Cajal, Madrid, Spain

Dear Editor:

Enterobacteriaceae are an important cause of infections, especially in immunocompromised patients. The recent appearance of carbapenemase-producing enterobacteriaceae has generated a real therapeutic challenge.<sup>1</sup> Reported for the first time in the 1990s, in the last year we have witnessed the dissemination of these strains in several Spanish hospitals. This has generated an important epidemiologic problem and a challenging situation in immunosuppressed patients like kidney transplant recipients.

We describe a case of recurring urinary infections due to *Klebsiella pneumoniae* carbapenemase (KPC)-producing bacteria in a 78-year-old male who had received a kidney transplant in November 2013. His medical history included chronic kidney disease secondary to membranous glomerulonephritis, for which he had initiated haemodialysis in March 2013. As a postoperative complication, he presented calyceal fistula that was refractory to 2 surgical procedures and was finally repaired by endourologic injection of cyanoacrylate. The first hospitalisation was prolonged for more than 2 months, during which time he had several urinary infections secondary to extended-spectrum beta-lactamase-producing *Klebsiella pneumoniae*, treated with meropenem. In successive controls, rectal colonisation by KPC was observed. In the following months, he was hospitalised 4 times for urinary infection secondary to KPC, and possible urological causes were ruled out. Different antibiotic regimens were tried, including amikacin and colistin, meropenem at high doses together with tigecycline, as well as colistin and tigecycline. The duration of each of these treatments lasted more than 2 weeks while monitoring the levels of those antibiotics that are more nephrotoxic. The urine cultures became negative, but this was only transitory

and the infection recurred weeks after finishing the antibiotic cycle, which led to another hospitalisation. For this reason, we decided to initiate treatment with the recent antibiotic ceftazidime-avibactam (C-A) for 2 weeks at a dose of 1000/250 mg every 12 h, which achieved the definitive eradication of the urinary infection as well as the KPC carrier state.

Urinary tract infections are an important cause of morbidity, hospitalisations and elevated hospital costs associated with kidney transplantations. The most frequently involved microorganisms are Gram-negative. The dissemination of carbapenem-resistant strains has been associated with higher mortality in transplanted patients.<sup>2,3</sup> Prolonged hospitalisation and the previous use of carbapenems have been related with a greater probability of developing these infections. In our patient, the previous endourologic seal of the calyceal fistula with cyanoacrylate made us consider the possible correlation that it may have had with the recurring infections, although there is no evidence in the literature to support this.

This is the first reported case of urinary infection due to KPC in a renal transplant recipient cured with C-A. Avibactam is a non-beta-lactam beta-lactamase inhibitor that, in combination with ceftazidime, has demonstrated a bactericidal effect in infections by resistant enterobacteriaceae and those caused by *Pseudomonas aeruginosa*.<sup>1</sup> Studies in animal models have demonstrated that C-A is effective in meningitis, septicaemia, pyelonephritis and pneumonia caused by these strains. Currently, it is in phase 3 trial for the treatment of urinary infections and complicated intraabdominal infections in humans.<sup>4</sup> In our case, its administration was for compassionate use, and it was shown to be a safe, effective and well tolerated. Clinical trials are necessary to evaluate the efficacy of C-A, although the preliminary results look promising.

DOI of original article:

<http://dx.doi.org/10.1016/j.nefro.2015.01.001>.

\* Please cite this article as: Caravaca-Fontán F, Jiménez-Álvarez S, Marcén-Letosa R, Fernández-Rodríguez A, Rodríguez-Navarro CQ. Ceftazidima-avibactam en el tratamiento de infecciones urinarias por *Klebsiella* productora de carbapenemasa en trasplante renal. *Nefrología*. 2015;35:412–413.

\* Corresponding author.

E-mail address: [fcaravaca@gmail.com](mailto:fcaravaca@gmail.com) (F. Caravaca-Fontán).

---

## Conflict of interest

The authors have no conflicts of interest to declare.

## REFERENCES

1. Satlin MJ, Jenkins SG, Walsh TJ. The global challenge of carbapenem-resistant *Enterobacteriaceae* in transplant recipients and patients with hematologic malignancies. *Clin Infect Dis*. 2014;58:1274-83.
  2. Perez F, van Duin D. Carbapenem-resistant *Enterobacteriaceae*: a menace to our most vulnerable patients. *Cleve Clin J Med*. 2013;80:225-33.
  3. Kalpoe JS, Sonnenberg E, Factor SH, del Río Martín J, Schiano T, Patel G, et al. Mortality associated with carbapenem-resistant *Klebsiella pneumoniae* infections in liver transplant recipients. *Liver Transpl*. 2012;18:468-74.
  4. Lagacé-Wiens P, Walkty A, Karlowsky JA. Ceftazidime-avibactam: an evidence-based review of its pharmacology and potential use in the treatment of Gram-negative bacterial infections. *Core Evid*. 2014;9:13-25.
- 

# Iliac artery obliteration as a cause of renovascular hypertension in kidney graft recipients: A difficult and uncommon diagnosis<sup>☆</sup>

## Obliteración de la arteria ilíaca como causa de hipertensión renovascular en el paciente trasplantado renal, un diagnóstico difícil y poco frecuente

Ana Patricia González-Cáceres, Ioana Bancu\*, Francisco Javier Juega-Mariño, Laura Cañas-Solé, Josep Bonet Ricardo Lauzurica

Servicio de Nefrología, Hospital Universitario Germans Trias i Pujol, Universidad Autónoma de Barcelona, Badalona, Barcelona, Spain

---

Dear Editor:

Our patient is a 70-year-old woman with chronic kidney disease secondary to polycystic kidney disease. She began haemodialysis in 1995 and received the first deceased-donor kidney transplant (DDKT) in 1997; the graft was lost 15 days later due to acute rejection, followed by removal of the graft. In 2004, a second DDKT was performed, and a kidney graft was implanted in the left iliac fossa with end-to-side anastomosis of the external iliac artery with the renal artery; as induction immunosuppressive therapy, she received sequential quadruple therapy with basiliximab, prednisone, mycophenolate mofetil and tacrolimus. The patient became stabilised with creatinine levels of 2 mg/dL. Her medical history also included type 2 diabetes mellitus, moderate-severe mitral insufficiency and severe peripheral arterial disease with bilateral femoropopliteal obliteration diagnosed in 2007.

After kidney transplantation, blood pressure was controlled with an  $\alpha$ -blocker until 5 months prior to the current episode, when she presented at office visits with poor

blood pressure (BP) control of 190/90 mmHg. Ambulatory blood pressure monitoring (ABPM) showed a mean 24 h BP of 166/89 mmHg and a riser pattern despite treatment with 3 drugs ( $\alpha$ -blocker,  $\beta$ -blocker and diuretic). Treatment with angiotensin-converting enzyme (ACE) inhibitors was initiated, and 2 weeks later renal function decreased with creatinine levels of 3.2 mg/dL; this drug was withdrawn and renal function improved.

The patient reported symptoms that had been progressing over a week period, including progressive dyspnoea, oedema and a weight gain of 5 kg. Upon hospitalisation, she presented a BP of 180/90 mmHg. Physical examination detected bibasilar crackles, systolic murmur in the mitral area, absence of bilateral dorsalis pedis pulses, pitting oedema and murmur in the right groin. The workup upon admittance showed serum creatinine 3.1 mg/dL; chest X ray presented signs of heart failure.

The oriented diagnosis was biventricular heart failure in the context of a hypertensive crisis, and treatment was initiated with nitro-glycerine and endovenous furosemide, which resulted in improvement of both BP and heart failure.

---

DOI of original article:  
<http://dx.doi.org/10.1016/j.nefro.2015.06.007>.

<sup>☆</sup> Please cite this article as: González-Cáceres AP, Bancu I, Juega-Mariño JF, Cañas-Solé L, Bonet J, Lauzurica R. Obliteración de la arteria ilíaca como causa de hipertensión renovascular en el paciente trasplantado renal, un diagnóstico difícil y poco frecuente. *Nefrologia*. 2015;35:413-414.

\* Corresponding author.

E-mail address: [ioana.bancu@yahoo.com](mailto:ioana.bancu@yahoo.com) (I. Bancu).