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https://doi.org/10.1016/j.eimc.2022.05.008

Chronic ESBL-*Klebsiella pneumoniae* prostatitis treated with once-daily tigecycline monotherapy in home hospitalization

Tratamiento con tigeciclina administrada una vez al día en monoterapia de una prostatitis crónica causada por Klebsiella pneumoniae *productora de beta-lactamasas de espectro extendido*

Dear Editor,

We present the case of a 79-year-old male with a history of low-risk myelodysplastic syndrome diagnosed in 2013, currently without specific treatment. He required a resection of the terminal ileum due to hemorrhagic ileitis in 2014. Afterwards, he presented several episodes of urinary tract infections (UTI). The first consisted of an acute prostatitis in 2015 caused by an extended-spectrum beta-lactamase (ESBL)-producing *Klebsiella pneumoniae*. Thereafter, he suffered from prostatic and seminal vesicle abscesses requiring bilateral orchiectomy in 2016. Abscesses were drained, and the patient received empirically linezolid and meropenem. Treatment was switched to ertapenem according to culture results, for a total of 21 days. No new episodes of prostatic or seminal vehicle abscesses have been observed. In 2017, he was admitted twice for sepsis secondary to prostatitis due to the ESBL-*K. pneumoniae*. In November 2020, he was diagnosed with voiding syndrome, being prescribed two months of fosfomycin-trometamol 3 g every 48 h with good tolerance. Minimum inhibitory concentration (MIC) was < 16 mg/L at the beginning of the treatment, with development of resistance after the antibiotic course (MIC > 256 mg/L). In December 2020, he was admitted because of persistence of lower UTI symptoms with the presence of ESBL-*K. pneumoniae*, being treated with ertapenem 1 g/24 h for one week.

In February 2021, he was readmitted with astheny, general malaise, dysuria and vesical tenesmus, low-grade fever (37.5 °C) and perianal discomfort, being diagnosed of recurrent prostatitis. A new course-treatment of ertapenem (1 g/24 h) was started (glomerular filtration rate 31 mL/min/1.73 m^2). After 3 days, urine culture showed ESBL-*K. pneumoniae* susceptible to carbapenems, without other potential alternatives. Clinical follow-up was satisfactory, with resolution of voiding symptoms and improvement of analytical parameters including glomerular filtration rate. However, on the 13th day of treatment, the patient presented neutropenia (initial neutrophils 5.8×10^3 u/mcl, nadir 0.43×10^3 u/mcl), and diarrhea, which caused hypernatremia, hypokalemia, hypomagnesemia, and hypocalcemia. Intravenous fluids and electrolyte replacement were required. *Clostridioides difficile* associated diarrhea was ruled out, so side effects were attributed to ertapenem. Treatment was firstly switched to tigecycline 100 mg followed by 50 mg/12 h. After the change, a significant improvement was noticed. Diarrhea went away, ion values were corrected, and neutropenia improved (although one dose of filgrastim was administered). After 48 h with tigecycline, the patient was discharged to home hospitalization with tigecycline 100 mg/24 h for 14 days to complete 4 weeks of antibiotic treatment. The patient did not present any recurrence nine months after this episode, with

negative control urine cultures. Unfortunately, semen culture was not requested at any time.

We present the first case of chronic prostatitis due to ESBL-*K. pneumoniae* treated with once-daily tigecycline. This approach resolved the adverse events caused by ertapenem and allowed the patient to be early discharged.

Carbapenems are associated with diarrhea, neutropenia or asthenia.[1] In our case, ertapenem caused numerous adverse events, with a probable causal relationship according to the Naranjo Scale. Due to the absence of therapeutic alternatives, need for prolonged antibiotic duration, penetration issues, risk of adverse effects and possibility of discharge, tigecycline was chosen as a potential alternative.[2]

Tigecycline is a third generation tetracycline whose use in UTI is controversial due to its limited urinary excretion (5–35%).[3,4] However, it may be an alternative in the treatment of prostatitis.[2]

In terms of pharmacokinetics, tigecycline presents an excellent tissue penetration, showing a high volume of distribution (7–9 L/kg).[5–7] Prostate penetration depends on the lipophilicity and degree of ionization of the drug. Tetracyclines, due to their high lipophilicity, penetrate up to 90–100% in the prostatic tissue, although specific data for tigecycline are lacking.[5–7] Other interesting characteristics include its long elimination half-life (42 h), allowing the once-daily administration.[7,8] This dosing has shown optimal therapeutic levels (maximum concentration 1.5 mg/L), considering that, for *Enterobacterales*, its pharmacokinetic/pharmacodynamic index is the area under the curve/MIC ≥ 15–20. These concentrations guarantee sufficient levels based on the established cut-off of 0.5 mg/L.[5–8] However, this approach is experimental with very limited clinical evidence.[7,8]

Tigecycline has demonstrated clinical and microbiological cure in complicated UTIs (77.4–78.6% and 85.7%, respectively).[3,9] Concerning prostatitis, some cases have demonstrated its clinical effectiveness without safety issues.[3,6,9,10]

In our case, the use of tigecycline for the treatment of ESBL-*K. pneumoniae* prostatitis optimized tolerability, avoiding ertapenem-associated adverse effects while maintaining clinical effectiveness. Once-daily administration regimen allowed early hospital discharge to home hospitalization, reducing the risk of nosocomial complications, and improving patient's quality of life.

Conflict of interest

There is no conflict of interest or source of funding for the present study.

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https://doi.org/10.1016/j.eimc.2022.05.006

Streptococcus oralis, an opportunistic pathogen in crystalline keratopathy

Streptococcus oralis, *un patógeno oportunista en la queratopatía cristalina*

Case

This is the case of a 55-year-old patient with type 2 diabetes mellitus and microangiopathy treated with metformin (850 mg twice daily). He also had open-angle glaucoma, a diabetic retinopathy associated with macular oedema for which he had received 14 intravitreal injections in his right eye (RE) and eight injections in his left eye (LE) with aflibercept (40 mg/ml), as well as retinal detachment in his LE that required pars plana vitrectomy (23 g and endolaser for small paravascular tears). In addition, he reported frequent use of daily contact lenses. The patient suffered from progressive worsening of visual acuity in his RE with conjunctival hyperaemia and photophobia. Examination of his RE revealed a cloudy cornea, as well as two lateral corneal ulcers (3 × 2 mm) and another in the medial region in a crescent shape. Corneal scraping samples were taken for microbiological study.

The corneal scraping sample was inoculated on trypticase soy agar with 5% sheep blood (Becton Dickinson, Franklin Lakes, NJ, USA), Sabouraud agar with chloramphenicol (BD™) and chocolate agar, in addition to specific culture for the detection of *Acanthamoeba* spp. For the culture of *Acanthamoeba* spp., one to two colonies of *Escherichia coli* or *Enterobacter aerogenes* were emulsified in Page's solution until a homogeneous turbidity was achieved,

DOI of original article: https://doi.org/10.1016/j.eimc.2022.05.003.