



EVALUATION OF PIPERAZILLIN / TAZOBACTAM DOSAGE IN SEPTIC PATIENTS ATTENDED IN AN EMERGENCY DEPARTMENT

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BACKGROUND

Sepsis is one of the main causes of assistance to emergency services worldwide. Although there is a consensus for beta-lactams administrations on extended infusions in critical care units, the use of this strategy in the Emergency departments continues to be reduced.

PURPOSE

To evaluate the probability of achieving an adequate pK/pD ratio for different dosages of piperazillin/tazobactam with different degrees of renal function of the patients based on the isolates obtained in blood cultures of patients treated in an emergency department with diagnosis of sepsis.

MATERIAL AND METHODS

Retrospective observational study (July 2018-December 2019)

Inclusion criteria: Strains causing bacteremia in patients with sepsis admitted in an Emergency Department

Simulations:

- Dose: 4/0,5 g each 6h and 8h
- Infusions: 30 min y 3h
- Renal function: ClCr=120, 70 y 30 mL/min

Pharmacokinetics parameters

Sukarnjanaset W- J Pharmacokinet Pharmacodyn. 2019;46:251-61.

Udy AA. Crit Care Lond Engl. 2015;19:28.

Van der Werf TS. Intensive Care Med. 1997;23:873-7.

$$fT > MIC = [(t_2 + t_{inf}) - t_1] \times (100 / \tau)$$

- t_1 : time at which the free serum concentration reached the MIC,
- t_2 : post-infusion time at which the free serum concentration equalled the MIC in the elimination phase
- τ : dosing interval.

1000 subject Monte Carlo simulation performed using Microsoft Excel®

Dosing regimen successful: probability of target attainment (PTA) value $fT > 100\%MIC$ for piperazillin and $fT > 70\%MIC$ for tazobactam was higher than to 90%.

RESULTS

60 strains included

E Coli (34; 56.7%), *K Pneumoniae* (14, 23.3%)
P aeruginosa (6, 10 %).

Piperazillin

PTA $fT > 100\%MIC$ 4g each 8h

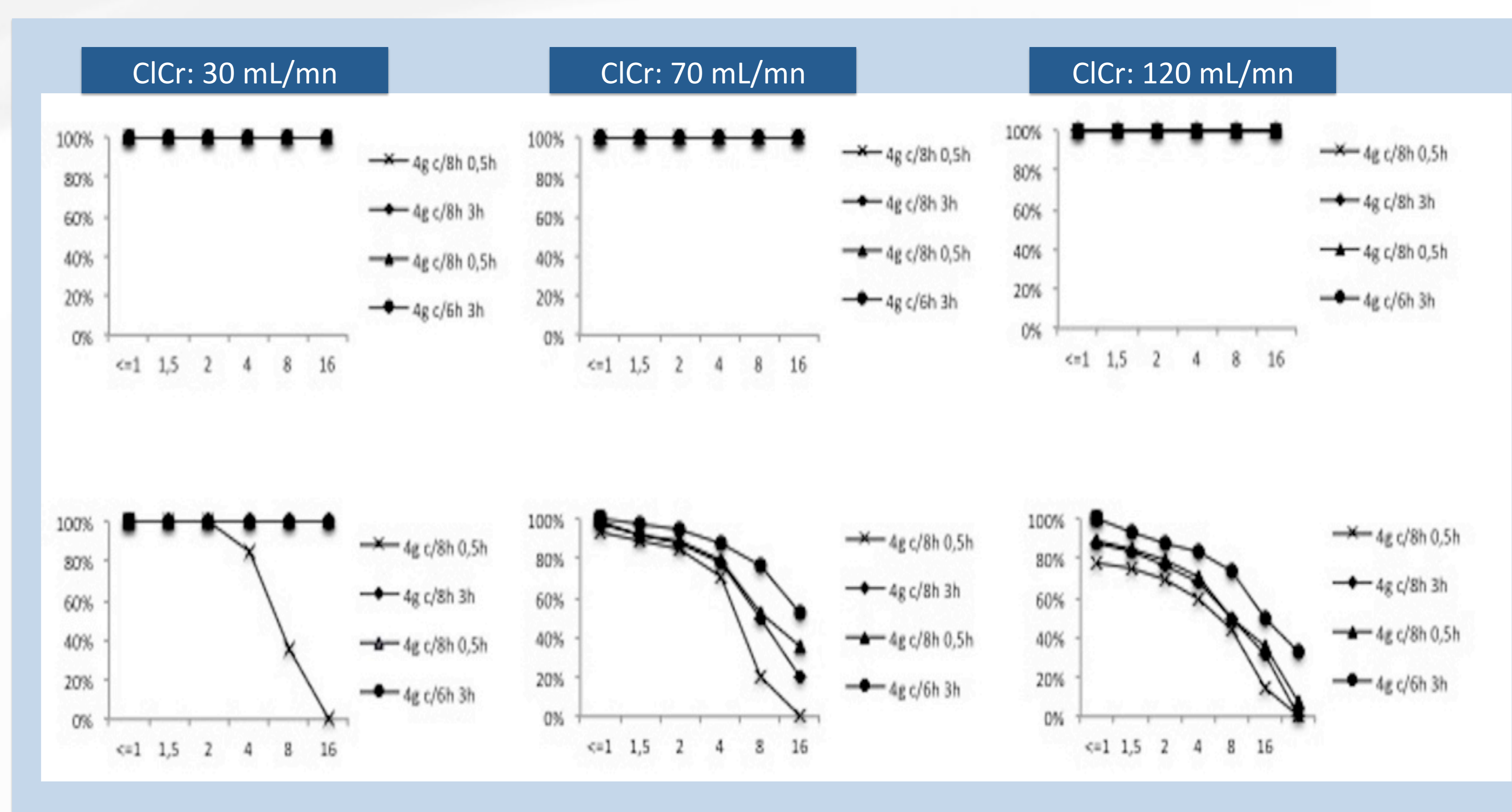
- ClCr: 120 mL/min: 60.3% (0,5h) 81.8% (3h)
- ClCr: 70 mL/min: 75,1% (0,5h) 94,3% (3h)

PTA $fT > 100\%MIC$ 4/0,5g each 6h > 90% for both infusions at 0.5 and 3h.

Tazobactam

PTA $fT > 70\%MIC$ 0,5g each 8h

- ClCr: 120 mL/min: 47.3% (0,5h) 63,8% (3h)
- ClCr: 70 mL/min: 87,0% (0,5h) 98,1% (3h)



CONCLUSIONS

PK/PD objective of $fT > 100\%MIC$ for Piperazillin/tazobactam requires the administration of 4/0.5g/6h or extended infusion administration, especially in patients with a high renal clearance and strains with high levels of beta-lactamases expression.