Ertapenem administered by subcutaneous or intravenous route in patients with bone and joint infection | 1

Our results indicate that 1 g of ertapenem administered twice daily, by the iv or sc route, may optimize ertapenem exposure and achievement of PK/PD targets in patients with BJI” Goutelle et al (2018).

Abstract:

Background: Ertapenem is a therapeutic option in patients with Gram-negative bone and joint infection (BJI). The subcutaneous (sc) route of administration is convenient in the outpatient setting and has shown favourable pharmacokinetics (PK), but available data on ertapenem are limited.

Objectives: To perform population PK analysis and pharmacokinetic/pharmacodynamic (PK/PD) simulation of ertapenem administered by the intravenous (iv) or sc route to patients with BJI.

Patients and methods: This was a retrospective analysis of PK data collected in patients with BJI who received iv or sc ertapenem. Measured ertapenem concentrations were analysed with a non-parametric population approach. Then, simulations were performed based on the final model to investigate the influence of ertapenem route of administration, dosage and renal function on the probability of achieving a pharmacodynamic (PD) target, defined as the percentage of time for which free plasma concentrations of ertapenem remained above the MIC (fT>MIC) of 40%.
Results: Forty-six PK profiles (13 with iv and 33 with sc ertapenem) with a total of 133 concentrations from 31 subjects were available for the analysis. A two-compartment model with linear sc absorption and linear elimination best fitted the data. Creatinine clearance was found to significantly influence ertapenem plasma clearance. Simulations showed that twice daily dosing, sc administration and renal impairment were associated with an increase in fT>MIC and target attainment.

Conclusions: Our results indicate that 1 g of ertapenem administered twice daily, by the iv or sc route, may optimize ertapenem exposure and achievement of PK/PD targets in patients with BJI.

Reference:

https://doi.org/10.1093/jac/dkx477

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