

Original Article

**Ciprofloxacin, oxacillin, piperacillin and sulfamethoxazole by systemic administration for the control of severe infections: Is dose adjustment required for critical burn patients?**

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**Aim:** To investigate the kinetic disposition of ciprofloxacin, oxacillin, piperacillin, and sulfamethoxazole and evaluate PK/PD target attainment in burn patients. **Methods:** Forty adult burn patients, both genders (76 sets of plasma levels) from the Intensive Care Unit of Plastic Surgery and Burns (ICU) were included in the study. Patients received antimicrobial therapy at the recommended initial dose regimen as part of their medical care. Namely, ciprofloxacin (n = 8 patients/11 sets) and oxacillin (7/10) were prescribed in the early period of treatment; if nosocomial infection was suspected, piperacillin/tazobactam (20/27) was prescribed; sulfamethoxazole (15/28) was also prescribed for the control of documented or suspected infections. Blood sampling was performed during the dosing intervals and drug plasma measurements were performed. Pharmacokinetic data were derived by applying specific software, and drug effectiveness was evaluated based on PK/PD target attainment. **Finding:** Large variability in the pharmacokinetic data was observed for the investigated antimicrobial agents. For sulfamethoxazole, significant differences were not detected among patients with renal failure and those with preserved renal function. A PK/PD target greater than 60% was attained when renal function was preserved in patients treated with ciprofloxacin, oxacillin, piperacillin and sulfamethoxazole. **Conclusion:** Unpredictable pharmacokinetics were observed for all of the investigated antimicrobial agents. Based on the PK/PD target attainments, once dose adjustments were not required, the effectiveness of antimicrobial therapy against susceptible common pathogens was guaranteed for burn patients with preserved renal function receiving ciprofloxacin (0.5 mg/L, MIC), oxacillin, piperacillin and sulfamethoxazole for the control of infections.

**Keywords:** Antimicrobial agents, pharmacokinetics, PK/PD correlation, critical burn patients

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