rifampin/vancomycin or similar combinations during the six weeks preceding the baseline of this study.

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49.009

Population pharmacokinetics of meropenem in pediatric patients: a concurrent analysis of the plasma and urine concentration data

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Background: This study aimed to develop a population pharmacokinetic model for meropenem in Japanese pediatric patients, specifically focusing on the drug urinary excretion process. This study also aimed to use this model to assess the pharmacodynamics of meropenem regimens against common bacterial populations.

Methods: Pharmacokinetic data (229 plasma samples and 61 urine samples) were collected from 40 infected children (age, 0.2—14.8 years; body weight, 3.8—64.0 kg) in nine separate studies. The data were concurrently fitted into a multi-compartment model using the NONMEM program. The developed model was then used for a pharmacodynamic Monte Carlo simulation to estimate the probabilities of attaining the bactericidal target (40% of the time for which the free drug concentration remains above the MIC for the bacterium).

Results: In the final population pharmacokinetic model, body weight (BW, kg) was the most significant covariate as follows: CLr (L/h) = 0.254 3 BW, CLnr (L/h) = 3.45, Vc (L) = 0.272 3 BW, Q (L/h) = 1.65 and Vp (L) = 0.228 3 BW, where CLr and CLnr are the renal and non-renal clearances, Vp and Vc are the volumes of distribution of the central and peripheral compartments, and Q is the intercompartmental (central—peripheral) clearance. The pharmacodynamic assessment based on this model showed that regimens of 10—40 mg/kg, three times a day (0.5-h infusions), achieved a target attainment probability of >80% against clinical isolates of *Escherichia coli* (MIC90 = 0.03 mg/L), *Streptococcus pneumoniae* (MIC90 = 0.5 mg/L), methicillin-susceptible *Staphylococcus aureus* (MIC90 = 0.12 mg/L), *Haemophilus influenzae* (MIC90 = 0.25 mg/L) and *Pseudomonas aeruginosa* (MIC90 = 1 mg/L), in most typical patients (BW = 10, 20 and 30 kg).

Conclusion: These results provide a better understanding of the pharmacokinetics of meropenem in Japanese pediatric patients. They are also useful in the choice of a meropenem regimen based on the BW of the patient and the susceptibility of the causative bacteria.

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Antibiotics: Usage and Stewardship (Poster Presentation)

50.001

Appropriate use of fluoroquinolones in a Lebanese tertiary medical center

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Background: Fluoroquinolones are among the most widely prescribed antibiotics especially for respiratory and urinary tract infections. However, concerns about increasing resistant micro-organisms associated with the use of these agents have emerged in both community and hospital settings. This has been particularly a rising major problem in Lebanon as the resistance to fluoroquinolones has reached 30-40% by 2008 (for *E.coli* and *Klebsiella* species). The primary objective of this study is to assess the appropriate use of fluoroquionolones in a Lebanese tertiary medical center by evaluating the appropriate indication, dose, dosage adjustment in renal impairment, and the duration of treatment.

Methods: We conducted a prospective observational study at Rafic Harriri University Hospital in Beirut, Lebanon between January and June 2009. We identified 118 patients receiving broad spectrum fluoroquinolones (levofloxacin, ciprofloxacin and moxifloxacin). The majority of patients were in internal medicine floors or in the intensive care unit. A data collection form inculding all pertinent information was used. Patients were followed from initiation of fluoroquinolone therapy to the discharge date. The assessment for the appropriate use was based on relevant guidelines from the Infectious Disease Society of America, manufacturer package inserts and clinical judgment. Monitoring of blood glucose levels with fluoroquinolone therapy was also evaluated.

Results: The patient population was predominantly male (62.7%) and the mean age was 62.8 years. About one third of the patients (29.6%) had decreased renal function necessitating dosage adjustment of ciprofloxacin or levofloxacin. The main indications were community acquired pneumonia and diabetic foot infections. Cultures were taken in only 59.3% of patients. Of the positive cultures, the most common isolated micro-organisms were *E. coli* and *Pseudomonas aeruginosa*. The final percentage of fluoroquinolone appropriate indication, dose and duration of therapy was 93.2%, 74.5% and 57.6% respectively (which were also calculated for each drug separately). 57.1% of patients did not receive the appropriate dose adjustment according to the level of renal dysfunction (calculated by using Cockcroft-Gault equation). Baseline blood glucose was monitored in only 21.5% of patients.

Conclusion: The major clinical interventions that need improvement in our tertiary medical center are adequate renal adjustment of the dose of fluoroquinolones and the duration of therapy.

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