OMICS Group Conferences
Accelerating Scientific Discovery

International Conference on
Omics Studies

September 04-05, 2013 Holiday Inn Orlando International Airport, Orlando, FL, USA

Therapeutic monitoring of amphotericin B in Saudi ICU patients using HUPLC MS/MS assay

Al-Quadeib and Bushra
King Saud University, Saudi Arabia

Background: Amphotericin B is the first-line agent for the treatment of invasive aspergillosis and other life-threatening invasive fungal infections. The aim of the study was to monitor AmB in critically ill Saudi patients in ICU after IV administration of 0.5-0.75 mg/kg/day Fungizone®. Therefore, a fast, robust, selective, sensitive, and precise UPLC MS/MS method has to be developed to measure AmB concentrations in these patients.

Methods: Seven ICU patients with Creatinine Clearance (ClCr) > 40 ml/min and on AmB for at least 7 days were included in the study. After protein precipitation, the separation was performed on a Waters AQUITY UPLC MS/MS system, BEH Shield RP18 column with a gradient elution, and the detection was via electrospray ionization source with positive ionization mode, at 925.1 → 742.3 and 321.8 → 155 m/z for AmB and Clopidogrel (IS), respectively. One compartmental model was used to calculate the pharmacokinetics of intermittent IV infusion of AmB in these patients. Results: A fast, robust, selective, sensitive, and precise UPLC MS/MS method for AmB monitoring in human plasma using clopidogrel as IS was developed. The method was validated by calculating the precision and accuracy of inter- and-intra-day analysis in the concentration range of 200-4000 ng/mL with no significant difference among inter- and-intra-day analysis (P>0.05). The method was liner over all the investigated range with correlation coefficient, r > 0.995 of six replicates/day. The method was sensitive enough to measure AmB concentrations at all-time points within the dosing interval for all included patients. The pharmacokinetics of AmB in these patients, at steady state, showed a high terminal half-life (t1/2) of 124.6±73.4 h, with the highest concentration (Cpeak) of 513.9 ± 281.1 ng/mL and the lowest concentration, immediately before next dose, (Ctrough) of 316.4 ±129.0 ng/mL. The drug mean clearance (Cl) was 89.2 ± 26.9 mL/h/kg and there was a good correlation (r=0.69) between the AmB Cl and the ClCr in these patients, which was not reported before.

Conclusions: The pharmacokinetics of AmB in critically ill Saudi patients in ICU was studied using a fully validated rapid, sensitive and robust method. It is recommended to calculate AmB dose based on creatinine clearance in critically ill ICU patients which needs further investigation with larger population.

Biography

Al-Quadeib, Bushra, Ph.D. candidate in Newcastle University, UK. She has completed her Master at the age of 30 years from King Saud University, Pharmacy college, Saudi Arabia. She has published 6 papers in reputed journals and has been serving as an editorial board member of repute.