21st Annual European Pharma Congress

May 20-22, 2019 | Zurich, Switzerland

Evaluation of hospital wide implementation of aminoglycoside once daily dosing protocol in pediatrics

Yasmin A. Elsharawy, Aljawhara F.Alkoraishi, Reem Osman and **Abouelkheir**
King Saud University Medical City, Saudi Arabia

Background: Aminoglycosides are commonly used antibiotics to treat resistant infections in pediatrics. Aminoglycosides have concentration- dependent bactericidal activity with a long post-antibiotic effect. The pharmacodynamic target of Peak/MIC of 8-12 has been strongly associated with improved clinical outcomes and reduced mortality. In contrast, high trough concentrations have been associated with increased renal toxicity. Therefore, the main aim of this study was to evaluate the impact of a hospital wide implementation of the once daily (OD) aminoglycoside dosing protocol in children compared to traditional dosing (TD).

Method: This was a retrospective chart review including pediatric patients (age 1 month –12 years), who were admitted to the general wards or ICU at King Saud University Medical City (KSUMC), and received an aminoglycoside (gentamicin or amikacin) for suspected or proven gram- negative infection. Two different dosing regimens were evaluated: TD (from Jan. 2009 till Dec. 2014) and OD from (Jan. 2015 till Aug. 2018).

Results: A total of 146 patients (217 sample) who received gentamicin (99 as TD, 47 as OD) and 136 patients (222 sample) who received amikacin (75 as TD, 61 as OD) were included in the analysis. The mean peak serum concentrations in the OD groups were significantly higher than TD for both gentamicin and amikacin (10.8±4.62 vs. 5.53±2.50 and 29.3±11.52 vs. 19.54±7.21mg/L, $P<0.01$), respectively. Meanwhile, the percentages of patients with trough concentrations >1mg/L for gentamicin and >4mg/L for amikacin were significantly lower in the OD groups (0% vs. 12.1% and 1.2% vs. 38.5%, $P<0.01$), respectively. Likewise, the incidence of nephrotoxicity was significantly lower in the OD compared to TD for both gentamicin and amikacin (5% vs. 13.5% and 3% vs. 10%, $P<0.01$), respectively.

Conclusion: The OD aminoglycoside regimen increased the likelihood of achieving the pharmacodynamic target of Peak/MIC of 8-12, with reduced incidences of nephrotoxicity.