
Oral

[O25-8] O25-8: Infections in pediatrics

Chairs: Camelia Grigore, Romania / Natella Rakhmanina, USA

Mon. Sep 25, 2017 4:00 PM - 5:00 PM Room C1 (1F)

(Mon. Sep 25, 2017 4:00 PM - 5:00 PM Room C1)

[O25-8-4] Therapeutic drug monitoring of vancomycin in neonates and reliability of GFR estimated by Schwartz method

Sunwoo Jung¹, Inyoung Hwang², Seunghwan Lee³, Sanghoon Song⁴, Kyung-Sang Yu⁵, In-Jin Jang⁶ (1.Seoul National University, 2.Seoul National University, 3.Seoul National University, 4.Seoul National University, 5.Seoul National University, 6.Seoul National University)

Keywords: vancomycin, TDM, neonate, Schwartz equation

Background

Vancomycin is one of antibiotics for treatment of Gram-positive bacteria. As vancomycin has a narrow therapeutic index, therapeutic drug monitoring (TDM) is required to maximize therapeutic efficacy and minimize toxicity. In this study, we evaluated whether glomerular filtration rate estimated by Schwartz method (Schwartz GFR) could be used to accurately predict vancomycin concentrations in neonates.

Methods

Electronic medical records of neonatal patients who underwent TDM in Seoul National University Children's Hospital from May 2016 to February 2017 were reviewed, and patients' age, height, weight, serum creatinine level were collected. Schwartz GFR at the time of TDM was calculated. Patients were categorized into preterm and full-term according to their gestational ages. The first TDMs were classified into therapeutic, subtherapeutic and toxic levels according to a target concentration range of 10-20 $\mu\text{g/mL}$. Predicted vancomycin concentration at the first TDM and observed concentration of the second TDM were compared using paired *t* test.

Results

A total of 32 neonatal patients were included in this study (21 preterm, 11 full-term). Mean age at the first vancomycin TDM report was 10.6 ± 7.1 days and mean Schwartz GFR was 37.2 ± 32.4 mL/min/1.73m² (full-term infants: 53.5 ± 32.8 , preterm infants: 26.1 ± 27.7 mL/min/1.73m²). In the first TDM, there were 17 cases (53.1 %) of subtherapeutic levels and 6 cases (18.8 %) of toxic levels. In preterm neonates, there were 10 cases (47.6 %) of subtherapeutic levels, and 4 cases (19.5 %) were toxic levels. Those in full-term neonates were 7 cases (63.6 %) and 2 cases (18.2 %), respectively. No statistical difference was found between predicted vancomycin concentration using the Schwartz GFR at the first TDM and observed concentrations in the second TDM (*p*-value: preterm 0.3874, full-term 0.0767, total 0.9155)

Conclusions

TDM should be considered in vancomycin therapy in neonate because the serum concentration is often out of therapeutic range. Based on these results, the Schwartz GFR can be considered to be useful in predicting neonates' vancomycin concentrations. However, other factors including neonatal development need to be further evaluated for precise TDM of vancomycin.