The aim was to determine the proportion of neonates achieving an optimal therapeutic vancomycin level at the first vancomycin concentration assay and which dosing regimen is the most suitable for neonates” Tauzin et al (2019).

Abstract:

Introduction: Vancomycin remains the reference antibiotic in neonates for care-related infections caused by β-lactam-resistant Gram-positive bacteria. Achieving the optimal serum vancomycin level is challenging because of high inter-individual variability and the drug’s narrow therapeutic window. Continuous infusion might offer pharmacokinetic and practical advantages, but we lack consensus on the dosing regimen. The aim was to determine the proportion of neonates achieving an optimal therapeutic vancomycin level at the first vancomycin concentration assay and which dosing regimen is the most suitable for neonates.

Methods: All neonates receiving continuous-infusion vancomycin (loading dose 15 mg/kg and maintenance dose 30 mg/kg/d) in a neonatal intensive care unit were retrospectively analyzed. The proportion of neonates reaching the target serum vancomycin level was calculated. After reviewing the literature to identify all published articles proposing a dosing regimen for continuous-infusion vancomycin for neonates, regimens were theoretically applied to our population by using maintenance doses according to covariate(s) proposed in the original publication.

Results: Between January 2013 and December 2014, 75 neonates received 91 vancomycin courses by continuous infusion. Median gestational age, birth weight, and postnatal age were 27 weeks (interquartile range 26-30.5), 815 g (685-1,240), and 15 days (9-33). At the first assay, only 28/91 (30.8%) courses resulted in vancomycin levels between 20 and 30 mg/L (target level), 23/91 (25.3%) >30 mg/L and 40/91 (43.9%) <20 mg/L. We applied six published dosing regimens to our patients. One of these dosing regimens based on corrected gestational age (CGA) and serum creatinine level (SCR) would have allowed us to prescribe lower doses to neonates with high vancomycin levels and higher doses to neonates with low levels. Conclusions: A simplified dosing regimen of continuous-infusion vancomycin did not achieve therapeutic ranges in neonates; a patient-tailored dosing regimen taking into account CGA and SCR level or an individualized pharmacokinetic model can help to
anticipate the inter-individual variability in neonates and would have been more suitable.

You may also be interested in...

Full Text

Reference: