Clinical outcomes in pediatric intensive care unit patients treated with vancomycin

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BACKGROUND

Vancomycin, a glycopeptide antibiotic, is used for the treatment of serious infections by gram-positive microorganisms, especially methicillin-resistant Staphylococcus aureus (MRSA). However, the attributable mortality of pediatric patients treated with vancomycin in pediatric intensive care unit (PICU) has been limited.

OBJECTIVE

Our study aimed to determine the factors influencing the mortality of pediatric patients treated with vancomycin in a pediatric intensive care unit (PICU) in a tertiary hospital in Northern Thailand.

METHODS

A retrospective study was conducted in pediatric patients admitted to PICU who received vancomycin from April 2018 to April 2019. We investigated the following variables: age, sex, underlying disease, diagnosis, length of stay (LOS) in PICU, Pediatric Index of Mortality 2 (PIM) score, mechanical ventilator use, renal replacement therapy, laboratory data, vancomycin dose, trough serum concentration (Ctough) of vancomycin and mortality rate.

RESULTS

One hundred and sixty pediatric patients were enrolled into the study (median age 12 months, range 2-180 months, male 69.4%). Therapeutic trough concentration of vancomycin (10-20 mg/L) were recorded in 32.5% (n=52) of cases. Septic shock was the most common diagnosis (49.3%) and the mortality rate was 39.4%. Our study found that Ctough of vancomycin outside the therapeutic range, mechanical ventilation and renal replacement therapy were associated with higher mortality rate in children (OR 3.14, 95% CI, 1.34-7.35; p=0.008), (OR 1.15, 95% CI, 1.62-22.7; p=0.007) and (OR 10.4, 95% CI, 2.6-41.4; p=0.001), respectively.

CONCLUSIONS

Inappropriate therapeutic vancomycin trough concentration, mechanical ventilator use and renal replacement therapy use are factors associated with mortality in PICU.

REFERENCES