DEVELOPMENT AND VALIDATION OF A NEW HPLC-UV METHOD FOR THE DETERMINATION OF VANCOMYCIN IN SMALL VOLUMES OF PLASMA OF INTENSIVE CARE UNIT PEDIATRIC PATIENTS.
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In intensive care unit (ICU) patients, vancomycin has remained the drug of choice for the treatment of nosocomial Gram-positive infections. Vancomycin is a glycopeptide antibiotic with a complex pharmacokinetic profile, and its routine monitoring and adjusting of basal serum level (BSL) has been the subject of intense discussion. Moreover, dosing of vancomycin in the pediatric population is not age-specific, failing to adjust because of the pharmacokinetics variability among pediatric groups. Therefore, the monitoring and adjustment of BSL of vancomycin in ICU pediatric patients is mandatory to achieve an appropriate antimicrobial therapy, with BSL of the antibiotic above the MIC of the infectious microorganisms, and to avoid potential adverse effects of the drug, such as ototoxicity or nephrotoxicity. The aim of this study was to develop and validate a simple, selective and sensitive reverse-phase HPLC method coupled with UV detection for the determination of BSL of vancomycin in ICU pediatric patients in small volumes of plasma. 25 µL of internal standard (IS; 7-hydroxycoumarin, 60 µg/mL) was added to 100 µL of plasma aliquots prior to protein precipitation with 25 µL of TFA 85%. Vancomycin and IS were eluted in isocratic mode at a flow rate of 2 mL/min on a Zorbax Rapid Resolution C18 analytical column (150 mm X 4.6 mm i.d., 3.5 µm particle size) maintained at 40 °C, with UV detection at 230 nm. The mobile phase comprised a mixture of TFA 0.015%/acetonitrile (82/8%, v/v). Retention times for vancomycin and IS were approximately 6.3 and 10.5 min, respectively. Calibration curves of vancomycin were linear over the concentration range of 3 – 70 µg/mL, with correlation coefficients r² ≥ 0.998. The limits of detection and quantification were 1 µg/mL and 3 µg/mL, respectively. Vancomycin was stable in plasma for at least one month when stored at −20 °C and −40 °C. This method was successfully applied to measure BSL of vancomycin in ICU pediatric patients.

Palavras chaves: Intensive Care Unit Patients; Vancomycin; HPLC; Basal Serum Level; Pharmacokinetic.