INTRODUCTION

The population approach and pharmacodynamic criteria have become available as tools in individualized antimicrobial therapy, leading to increased efficacy and reduced selection of resistance. However, little is known about the pharmacokinetics of vancomycin (VAN) in patients with hematological malignancies.

OBJECTIVES

To develop and validate a VAN population PK model in a broad and representative sample of adult patients with hematological malignancies.

METHODS

**Design and setting:**
- 1128 sparse serum concentration data from 72 patients were collected over 2 years in the post-chemotherapy phase.

**Serum sampling and drugs:**
- Data after the first dose and/or post-infusion were used.

**Pharmacokinetic analysis:**
- The population approach and pharmacodynamic criteria have become available as tools in individualized antimicrobial therapy, leading to increased efficacy and reduced selection of resistance.

**RESULTS**

**Validation:** Standardized prediction errors were 0.13±0.47 mg/L, 0.32±0.26 mg/L and 0.04±0.39 mg/L for the general, AML-1 and AML-2 models. The 95% confidence interval included a zero value for all of them and SD's were close to unity. Moreover, more than one of the three (37.9%) a priori predictions lies within ±20% of the predicted concentrations.

**CONCLUSIONS**

1.- VAN clearance and Vd are slightly higher than the values reported in studies using standard approaches. Also, the mean values accounting for the effect of renal function and TBW on CL and V, respectively, were higher than the ranges quoted for this antibiotic in other adult populations.

2.- General rather than population-specific covariates were the best predictors of the VAN pharmacokinetic parameters. Thus, critical characteristics of patients with hematological malignancies had no significant effect on VAN disposition.

3.- The proposed models could be used to estimate appropriate VAN dosage guidelines, which are not clearly defined for this high-risk population. Their simple structure should allow easy implementation in clinical software and application in dosage individualization.