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Poster

## [P25-4] P25-4: Anti-infective drugs (4): Vancomycin

Chair: Noboru Okamura, Japan

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## [P25-4-6] Large prediction errors of vancomycin simulation in ICU patients

Michiya Akabane<sup>1</sup>, Daiki Hira<sup>2</sup>, Tetsuichiro Isono<sup>3</sup>, Yoshito Ikeda<sup>4</sup>, Shin-Ya Morita<sup>5</sup>, Tomohiro Terada<sup>6</sup>  
(1.Shiga University of Medical Science Hospital, 2.Shiga University of Medical Science Hospital, 3.Shiga University of Medical Science Hospital, 4.Shiga University of Medical Science Hospital, 5.Shiga University of Medical Science Hospital, 6.Shiga University of Medical Science Hospita)

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### Background

Therapeutic drug monitoring (TDM) for vancomycin (VCM) can optimize the treatment of MRSA infection and minimize side effects. Although dose adjustment of VCM was performed using the TDM simulation software based on population pharmacokinetic analysis, we have often observed the low prediction accuracy. In the present study, we investigated factors that influenced on the prediction error (residual between measured and simulation-predicted concentration of VCM).

### Methods

A retrospective study was conducted among patients who were administered VCM and adjusted their dosage by TDM simulation since January to July 2016 at Shiga University of Medical Science Hospital. Seventy-two patients (129 samples) were classified into two groups (deviation and control) based on the prediction error. Here, deviation group means that the prediction error was out of the residual variability (23.7%, Yasuhara et al., TDM 1998). The patients' characteristics (gender, age, body weight, renal function; serum creatinine, anamnesis of heart failure, perioperative period or not, and intensive care unit admission or not) were collected from medical chart. The relationship between prediction error and patients' characteristics were analyzed by Pearson's correlation analysis and chi-square test.

### Results

Thirty-five patients (62 points) were classified as the deviation group. Ratio of patients in ICU was significantly higher in deviation group (14/35, 40.0%) than in control (7/37, 18.9%) ( $P < 0.05$ ). Renal function (serum creatinine at TDM simulation) did not affect the prediction error. On the other hand, change in serum creatinine from TDM simulation to next measurement was significantly correlated to residual error ( $R^2 = 0.16$ ). There were no significant differences in other patients' characteristics.

### Conclusions

Our results suggest that in the case of ICU admission, several factors such as hemodynamic changes during and after extracorporeal circulation, perioperative volume-shifting to the interstitial space, and catecholamine support, may cause the large prediction error. Therefore, frequent TDM is recommended for patients in ICU.