Results of a study comparing the performance of allometric versus consensus guideline–recommended vancomycin dosing in achieving initial trough concentrations within the desired range are reported" Brown et al (2017).

Abstract

Purpose: Results of a study comparing the performance of allometric versus consensus guideline–recommended vancomycin dosing in achieving initial trough concentrations within the desired range are reported.

Methods: A retrospective study was conducted to compare selected outcomes with 2 vancomycin dosing methods: (1) dosing by total body weight, as recommended in current consensus guidelines, and (2) a new empirical vancomycin dosing strategy grounded in allometry (the study of the relationship between body size and physiology). The primary outcome was attainment of an initial vancomycin trough concentration within the target range (10–20 mg/L). Rates of nephrotoxicity associated with the 2 dosing methods were compared.

Results: Allometric dosing resulted in 77% of the evaluated patient sample (n = 81) achieving vancomycin trough concentration targets at the initial measurement, as compared with a target attainment rate of 57% (n = 81) with guideline-recommended dosing (p = 0.0121); the rate of target attainment in obese patients was also improved with allometric dosing (73% versus 46%, p = 0.0327). Nephrotoxicity rates did not differ significantly between the 2 groups, but a lower rate was observed with allometric versus guideline-based dosing (1.2% versus 7.4%, p = 0.0584).

Conclusion: In hospitalized adults, allometric vancomycin dosing achieved a higher frequency of initial vancomycin trough concentrations within the target range of 10–20 mg/L, compared with dosing as recommended by consensus guidelines. The difference between methods in the percentage of troughs within the target range was most pronounced in obese patients.

Reference:

Brown, M.L., Hutchison, A.M., McAtee, A.M., Gaillard, P.R. and Childress, D.T. (2017) Allometric versus consensus guideline dosing in achieving target vancomycin trough concentrations. American Journal of Health-System Pharmacy. 74(14), p.1067-1075.

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