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Adjustment of vancomycin dosage for underweight pediatric cerebral palsy patient – Cases report

Shu-Hui Yao(姚淑惠)[1,2], Yih-Dih Cheng(鄭奕帝)[1,2*], Yow-Wen Hsieh(謝右文)[1,2]

[1]Pharmacy Department, China Medical University Hospital, Taichung, Taiwan

[2]School of Pharmacy, China Medical University, Taichung, Taiwan

OBJECTIVE

Pediatric patients with cerebral palsy (CP) often have growth failure, which is primarily due to poor nutrition. Linear growth was reduced significantly compared to healthy children, as indicated by reduced body weight or diminished triceps skinfold measurement. This study aimed to determine the optimal initial vancomycin dose to achieve appropriate trough levels in pediatric cerebral palsy underweight patient.

CASE SUMMARY

Case 1: A 13 year-old girl (10 kg; 109cm; <10th % height and weight on the weight-for-age growth charts in Taiwan general population) with past history of infantile cerebral palsy, epilepsy, congenital cystic adenomatoid malformation (CCAM) of the left lung, pneumonia, and sepsis was reported in this study about her vancomycin dosage adjustment due to underweight. The initial dose regimen of vancomycin was started on 150 mgs IV q6h according to her actual body weight (ABW), fit in the common dosage regimen, 40 to 60 mg/kg/day. It did not achieve trough levels of over 10 mg/L initially. Vancomycin trough level monitoring was suggested by pharmacist, and increasing dose based on ideal body weight (IBW) 10mg/kg/dose (260 mgs IV q6h) also mentioned. The trough level of vancomycin was increasing from 4.2 to 10.7 mg/L, and sufficiently to achieve recommended trough levels (10-20 mg/L) with clinical improvement and fair urine output.

Case 2: A 12 year-old girl (11.0 kg; 115 cm; <3rd % height and weight on the weight-for-age growth charts in Taiwan general population) with past history of quadriplegia, infantile CP was admitted via ER due to intermittent hemoptysis. She was transferred from ordinary ward to PICU post cardiopulmonary resuscitation (CPR), endotracheal tube insertion with ventilator support for respiratory failure, hemorrhagic gastritis and pulseless. Empirical Augmentin for pneumonia 40mg/kg/dose q8h for 13 days then sepsis, intra-abdominal infection and/or nosocomial infection was considered due to multiple line and insertion tubes. Her antibiotics upgraded to meropenem 40mg/kg/dose q8h and vancomycin 165mg q6h for 17 days, vancomycin trough level of 10.3 mg/L. The trough level monitoring and dose adjusted based on IBW 10mg/kg/dose was suggested by pharmacist to achieve vancomycin efficacy without toxicity for underweight pediatric CP patient.

CONCLUSION

Clinicians should be aware that initial vancomycin dose of 60 mg/kg/day with frequent monitoring and dose adjustment is recommended for underweight in pediatric cerebral palsy patient. A common vancomycin dosing regimen, 40 mg/kg/day, was not high enough to achieve trough levels of over 10 mg/L for underweight pediatric cerebral palsy patient. Careful drug monitoring must be performed, and increasing initial dose of vancomycin should be considered in pediatric cerebral palsy patient.