Concomitant piperacillin-tazobactam and vancomycin use increases the risk of acute kidney injury

AMR Alliance Japan

Medical history A male in his 40s was hospitalized for infection after artificial urinary sphincter implantation.

Day 1 *Escherichia coli* detected in urine culture on admission. Piperacillin-tazobactam (PIPC/TAZ) **4.5 grams three times per day started** on same day.

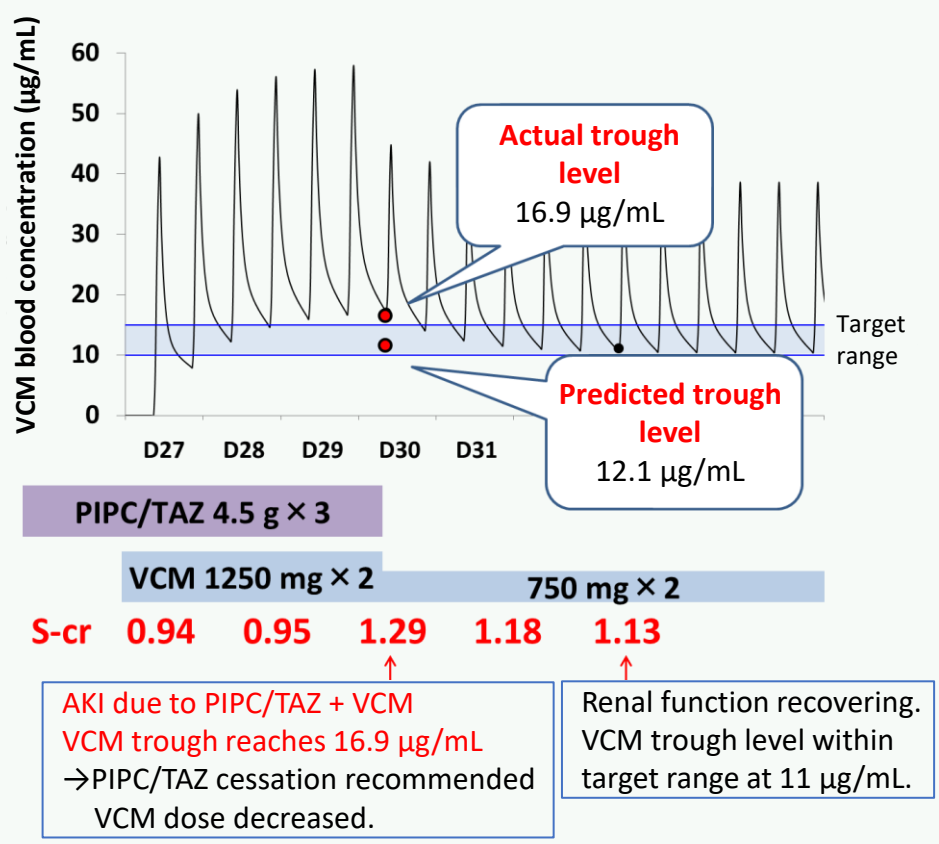
Day 27 The patient presented with fever of 38˚C. Methicillin-resistant *Staphylococcus aureus* (MRSA) and *Corynebacterium striatum* detected in a urine culture. Treatment with vancomycin (VCM) **1250 mg two times per day started** (S-cr 0.94 mg/dL, Ccr 144 mL/min).

Day 30 **Acute kidney injury (AKI) detected** (S-cr 1.29 mg/dL, Ccr 105 mL/min). **Predicted VCM trough blood level** was 12.1 µg/mL but **actual level was 16.9 µg/mL** (Target VCM trough range: 10-15 µg/mL).
Because concomitant PIPC/TAZ and VCM use frequently causes AKI, and because the PIPC/TAZ treatment period was long (30 days), **discontinuation of PIPC/TAZ therapy was recommended.**

PIPC/TAZ therapy was stopped the same day and the VCM dose was decreased to 750 mg twice per day.

Day 33 Renal function recovering. VCM trough level decreased to 11 µg/mL, within target range.

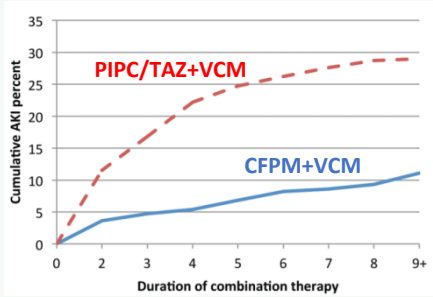
Day 48 Administration of VCM therapy completed without additional AKI.



Beware of increased risk of side effects due to unnecessary antimicrobial use

- Concomitant use of PIPC/TAZ and VCM is known to increase the risk for AKI. When possible, it is important to change one to a different antimicrobial or to discontinue one if unnecessary.
- In this case, the addition of VCM to prolonged PIPC/TAZ therapy resulted in AKI.

The risk of AKI due to concomitant PIPC/TAZ and VCM use



AKI risk is up to **THREE TIMES HIGHER** for PIPC/TAZ plus VCM compared to CFPM plus VCM.

Navalkele B et al.
Clin Infect Dis. 64:116-23,2017.

PIPC/TAZ: Piperacillin-tazobactam, VCM: vancomycin, CFPM: Cefepime

AMR Alliance Japan requested this case report as a part of a project to compile examples of antimicrobial stewardship and cases with and without the use of antibiotics.
For more information, please contact AMR Alliance Japan. Grand Cube, 3rd Floor, 1 -9 -2 Otemachi Financial City, Otemachi, Chiyoda-ku, Tokyo 100 0004 Tel: 03-4243-7156 Fax: 03-4243-7378 E-mail: info@hgpi.org