

COMMENTARY

Tobramycin leakage from the gut: What about the other components of SDD?

H.M. Oudemans-van Straaten

Department of Adult Intensive Care, VU University Hospital, Amsterdam, the Netherlands

Correspondence

H.M. Oudemans-van Straaten – h.oudemans@vumc.nl

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Selective decontamination of the digestive tract (SDD) reduces infections and mortality in intensive care patients.^[1,2] By the local application of tobramycin, polymyxin and amphotericin in the oropharynx and gastrointestinal tract, SDD eradicates *Staphylococcus aureus*, Gram-negative rods and yeasts, which are potentially pathogenic. If the gut barrier is intact, the antibiotics are not absorbed and remain in the digestive tract. However, during shock and sepsis, the gut barrier may fail, allowing leakage of antibiotics from the gut into the circulation. This phenomenon is especially described for tobramycin, the smallest constituent of SDD.^[3-5] If kidney function is diminished as well, subsequent removal of tobramycin is delayed and the drug may become toxic for the kidneys.^[6] Thus shock, sepsis and acute kidney injury are risk factors for the leakage of tobramycin from the gut.^[5]

In the present issue, Luinstra et al. report a patient receiving SDD with prolonged detectable serum concentrations of tobramycin. The patient was recovering from a complicated course of abdominal sepsis. She developed early acute kidney injury which was treated with continuous venovenous haemofiltration from day 2 to 42. Conventional SDD was started at day 3, and at day 11 she also received SDD suppositories twice daily, because a temporary ileostomy was created. The presence of tobramycin in serum was detected at day 45 (2.3 mg/l); serum concentrations only fell below 0.6 g/l at day 60 after complete discontinuation of the application of SDD in the mouth, gastric tube and orally; reduction of the dose was insufficient.^[7] While cohort studies and case reports have described the leakage of tobramycin from the gut into the systemic circulation,^[3-5] we do not know whether the other components of SDD, colistin and amphotericin, are absorbed as well. To my best knowledge, detectable serum concentrations of colistin and amphotericin during SDD have not been reported. Both drugs are nephrotoxic.^[8,9] Although molecular weights are higher than the molecular

weight of tobramycin, they are also low (tobramycin 468 g/mol, amphotericin 923 g/mol, colistin 1155 g/mol). Thus, for clinical monitoring in patients at risk of increased gut permeability, tobramycin is likely the most sensitive component. However, if increased tobramycin concentrations are detected in serum, discontinuation of the tobramycin component of SDD alone may not be sufficient to prevent nephrotoxicity. The other components might have been absorbed as well. However, we do not know this. Thus, knowledge on the leakage of amphotericin and colistin during SDD treatment in conditions of gut barrier failure is highly needed.

Disclosure

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