ABSTRACTS

Toxic tobramycin concentrations during selective decontamination in patients with acute renal failure

Selective decontamination of the digestive tract (SDD) uses topically applied antibiotics (usually tobramycin, colistin and amphotericin B) that are supposed to be non-absorbable. However, after prolonged use, enteral absorption of tobramycin appears to be possible which could lead to potentially toxic concentrations especially in patients with acute renal failure.

Mol et al. studied tobramycin levels in 19 adult patients treated with SDD and continuous venovenous haemofiltration (CVVH) for acute renal failure. The ultrafiltration rate was 35 ml/kg/h. A total of 26 blood samples were obtained. Patients were treated with SDD for at least 3 days. Twelve out of 19 patients (63%) had detectable serum concentrations ≥ 0.2 mg/l. One patient had a toxic concentration of 3 mg/l and three other patients had a serum tobramycin concentration > 1 mg/l. The three patients with the highest tobramycin concentrations all had ischaemic bowel disease. A few patients clearly showed rising tobramycin concentrations in consecutive samples.

This is a very important study showing that the use of SDD may result in potentially toxic tobramycin levels in patients treated with CVVH for acute renal failure. Therefore, the situation could be even worse for patients with renal failure who are not treated with CVVH. Patients with damage to the intestinal mucosa could also be at increased risk. Although the study is limited due to its small sample size, the warning expressed by the authors is obvious: measure tobramycin levels in all ICU patients with impaired renal failure and on prolonged (> 3 days) SDD treatment!


Changes in sublingual microcirculation in severe sepsis and septic shock do not correlate with skin perfusion

The central-to-toe temperature difference (∆T) can be used as a marker for systemic hypoperfusion. However, during sepsis discordance between systemic haemodynamic parameters and microcirculatory changes exists. Boerma et al. investigated the correlation between ∆T and microcirculatory alterations during sepsis using sublingual orthogonal polarization spectral imaging (OPS).

The authors used a semiquantitative analysis of microcirculatory flow called the Microvascular Flow Index (MFI). They included 35 patients with severe sepsis or septic shock. The primary outcome measure was the correlation between ∆T and MFI. No patient received vasodilators, activated protein C or steroids before OPS imaging. There was no correlation (r = 0.08, p = 0.65) between ∆T and MFI for the whole group or for patients with severe sepsis or septic shock. There was no correlation between either ∆T or MFI and several systemic haemodynamic parameters. Median MFI/∆T was not significantly different between survivors and non-survivors.

The results of this study underline the dispersive nature of blood flow in sepsis between microcirculatory and systemic haemodynamics. It confirms previous studies but unfortunately does not provide further evidence that quantification of the sublingual microcirculation is clinically useful in severe sepsis. Many questions remain to be answered before this technique can be used in clinical practice. As many of the contributing authors are leading researchers in this field, a heavy task rests upon their shoulders.