ICU
MANAGEMENT & PRACTICE

Topical Antibiotics: 'No Impact' on ICU Patient Outcomes

Prophylactic antibiotics applied areas in the mouth, throat and digestive tract were associated with low levels of antibiotic-resistant bacteria and no differences in patient survival and intensive care unit (ICU) length of stay, according to researchers from the University Medical Centre Utrecht in the Netherlands.

Data show that some antibiotic regimens, such as selective oropharyngeal (mouth and throat) decontamination (SOD) and selective decontamination of the digestive tract (SDD), have been effective in reducing the incidence of ICU-acquired respiratory tract infections. However, controversy exists regarding the relative effects of both measures on antibiotic resistance patient outcomes, according to background information in the UMC Utrecht study published in *JAMA*.

Both SOD and SDD consist of antibiotics which act against gram-negative bacteria, Staphylococcus aureus, and yeasts. These agents are applied in the oropharynx every six hours throughout the patient's ICU stay. In addition, selective decontamination of the digestive tract includes administration of topical antibiotics in the gastrointestinal tract, and a third-generation cephalosporin administered intravenously during the first four days in the ICU.

In the new study, Evelien A. N. Oostdijk, MD, PhD, of the UMC Utrecht, and colleagues compared 12 months of administration of SDD or SOD in 16 Dutch ICUs between August 2009 and February 2013. Patients with an expected length of ICU stay longer than 48 hours were eligible to receive the antibiotic regimens. In all, 5,881 and 6,116 patients were included in the clinical outcome analysis for SOD and SDD, respectively. Intensive care units were randomised to administer either regimen, the research team said.

Key findings of the study include:

- Day 28 mortality was 25.4 percent and 24.1 percent during SOD and SDD, respectively.
- Median length of stay in the ICU and hospital was determined for patients alive at day 28 and was similar for SOD and SDD.
- ICU-acquired bacteraemia occurred in 5.9 percent and 4.6 percent of patients during SOD and SDD, respectively.

Given the low incidence and minor absolute risk difference between the two study groups, the research team noted, the number needed to treat with SDD to prevent one episode of ICU-acquired bacteraemia (as compared with SOD) was 77 and was 355 for ICU-acquired bacteraemia caused by an aminoglycoside-resistant gram-negative bacterium. “It is therefore not surprising that the

observed reduction in ICU-acquired bacteraemia during SDD was not associated with a detectable effect on patient outcome," the team said.

Marin H. Kollef, MD, of the Washington University School of Medicine, St. Louis, and Scott T. Micek, PharmD, of the St. Louis College of Pharmacy, have commented on this study in an accompanying editorial.

"The investigation by Oostdijk et al. represents another important study performed by expert investigators and aimed at determining the optimal use of topical antibiotic prophylaxis for ICU patients with a specific focus on intestinal and oropharyngeal decontamination. Despite a large amount of research in this area, clinicians are still unclear on the optimal use of SDD and SOD. For the time being in the United States, SOD seems to be a more reasonable approach for the prevention of pathogenic bacterial overgrowth in critically ill patients. The use of SDD in the United States should probably be avoided until multicentre studies demonstrate the overall efficacy of SDD in hospitals with more widespread background antibiotic resistance."

Source: JAMA
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