Questions concerning "Chlorhexidine, octenidine, or povidone-iodine for catheter-related infections: A randomized controlled trial"

Sir,

We read with interest the article by Bilir *et al.*[1] as well as its associated conference abstract[2] reporting a clinical trial of chlorhexidine, octenidine, and povidone-iodine for skin antisepsis with the purpose of preventing vascular catheter-related infections. The authors report that chlorhexidine is significantly better than the other two antiseptics in preventing catheter-related sepsis and catheter-related colonization. However, in our opinion, the study has several potential limitations that remain unaddressed. Therefore, we would like to ask the authors for clarification.

First, the product specifications are unclear. It has not been stated whether the investigated products are alcohol- or water-based antiseptics. It is well-known that alcohol-containing products are superior to water-based products, especially concerning the immediate microbicidal effect that is important at the point of vascular catheter insertion. To really compare the efficacy of the different active ingredients — chlorhexidine, povidone-iodine, and octenidine dihydrochloride — it should be ensured that all of them are applied in the same vehicle. Comparing water-based with alcohol-based products results in a serious bias favoring the latter.[3,4] Furthermore, for octenidine dihydrochloride, there is no information provided concerning the applied concentration. Without this, it is impossible to compare the different active ingredients. Second, the clinical criteria used to diagnose catheter-related colonization and catheter-related sepsis, remain unclear. The diagnosis of catheter colonization requires quantitative culture of the catheter tip.[5] Cultures of the skin surrounding the catheter insertion site, as specified in the authors' "Methods section", are not adequate to diagnose catheter colonization.[5] Without clearly prespecified criteria, as part of a study's "Methods section", it remains unclear as to the kind of infections the patients exactly had, and whether they were relevant in the context of skin antisepsis.

Third, questions concerning the statistical analyses of study outcomes remain. The overall number of patients in the study is rather small, with a total of 57 patients (n = 19 per treatment arm). Additionally, although it is reported that a total of 109 catheters were studied, no information is provided concerning the distribution of multiple catheters and arterial or central venous catheters in the different treatment arms. Furthermore, the numbers of outcome events have not been specified. Only percentages of catheter-related sepsis and catheter-related colonization for each group are provided, but it remains unclear, whether these percentages apply to the number of patients in each group or to the number of catheters. Assuming that the outcome events were counted per group (e.g., 2 events per 19 patients), we have recalculated the statistics of this trial, using Fisher's exact test, and we did not find a statistically significant difference between the chlorhexidine and the octenidine groups, neither for catheter colonization nor for catheter-related sepsis.

It has been demonstrated in several clinical settings that octenidine dihydrochloride is an effective antiseptic that can be used for the prevention of catheter-related infections,[6-8] and that it is at least equal to chlorhexidine concerning its antimicrobial properties.[9,10] Therefore, we request the authors to address our remarks, while taking relevant literature into account.

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Nil.

Conflicts of interest

Michael Braun and Jörg Siebert are employees of Schülke & Mayr GmbH, Germany.

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