Coagulase-Negative Staphylococci in Diabetic Foot Osteomyelitis

To the Editor—In their study on the diagnostic value of swab cultures, compared with percutaneous bone biopsy specimens, for patients with diabetic foot osteomyelitis, Senneville et al. [1] found coagulase-negative staphylococci much more frequently in bone specimens than in swab samples (25.6% vs. 4.6%; \( P < .001 \)). As outlined in the accompanying editorial, this finding was rather unexpected, because coagulase-negative staphylococci are microorganisms with little suspected virulence [2]. If confirmed, these data may have an impact on the choice of antimicrobial regimen used in these patients, because coagulase-negative staphylococci are usually considered to be contaminants in such conditions.

According to the authors, “the finding of a higher proportion of coagulase-negative staphylococci isolates in bone biopsy samples, compared with swab samples, was independent of the findings of their microbiological laboratory, which identified all of the organisms cultured from both bone and swab samples (including bacteria from the skin flora) in accordance with the protocol they established in 1996 in their diabetic foot clinic” [1, p. 61]. However, in the article they refer to [3], in which Senneville and colleagues discussed similar patients with the same procedures, although they observed similar discrepancies (in 31 patients with both swab and bone biopsy specimen cultures, coagulase-negative staphylococci were never cultured from swabs, despite that they were found in 8 bone biopsies; \( P < .01 \)), Senneville and colleagues’ interpretation of this finding was much different: “this was likely to be related to the non-report-of coagulase-negative staphylococci from superficial samples by our laboratory” [3, p. 929]. Could the authors clarify what made them change their interpretation between the 2 studies?

Acknowledgments

Potential conflicts of interest. All authors: no conflicts.

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Reply to Tattevin et al.

To the Editor—As noted by Tattevin et al. [1], in the 17 patients (not “31 patients,” as they wrote) with 20 episodes of diabetic foot osteomyelitis reported in 2001 by us an our colleagues [2], coag-

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lase-negative staphylococci strains accounted for 29.7% of the cases, and, in the present series [3], coagulase-negative staphylococci strains accounted for 25.6% of cases. This finding indicates that our results remained remarkably constant throughout the 1996–2004 period. It is true that we initially attributed the absence of coagulase-negative staphylococci strains in swab culture specimens to hypothetical nonreporting by the microbiology laboratory, but we must admit that we were not fully satisfied with this hypothesis and had further discussions with our laboratory staff to make sure that coagulase-negative staphylococci were not underreported, which, indeed, proved to be the case. Therefore, as indicated in our article [3], all the coagulase-negative staphylococci strains yielded by both swab and bone cultures were, in fact, reported by our laboratory, in accordance with the protocol established in 1996 [2]. The surprisingly small proportion of coagulase-negative staphylococci strains cultured from our patients’ samples (from 5 [5.6%] of 109 samples)—which, compared with the proportion cultured from bone samples, was a significant difference (P<.001)—has also been found by others; for instance, in the recent study by Ge et al. [4], Staphylococcus epidermidis was isolated from 111 (6.1%) of 1817 superficial specimens of chronic foot wounds obtained from comparable patients.

In their letter, Tattevin and colleagues also raise the question of whether coagulase-negative staphylococci might be responsible for osteomyelitis complicating chronic foot wounds in diabetic patients. This important question has been under discussion for years; but, at the time of writing this letter, no definite answer has been found. In a review of the current literature, Lipsky [5] already noted in 1997 that microorganisms such as S. epidermidis and Corynebacterium species, which are often considered to be contaminants, have been well documented as pathogens in cases of diabetic foot osteomyelitis. In some studies, up to 50% of deep-bone cultures yielded coagulase-negative staphylococci [6–9]. However, Lipsky also stressed that “it is critical that the specimens for culture be obtained with proper precautions to avoid contamination” [5, p. 1321]. As indicated in our article [3], all the consecutive patients studied underwent surgical percutaneous bone biopsies, which were only performed by only trained senior orthopedic surgeons in the operating room under surgical aseptic conditions of sampling [3]. We believe that all possible precautions feasible in daily practice were taken to avoid contamination of the bone specimens obtained from our patients.

Unlike Tattevin and colleagues, we are not convinced that, if the coagulase-negative staphylococci strains in bone cultures were considered to be true pathogens, this would have an impact on the choice of antimicrobial regimen. In the present study [3], it would only have led to a change in the antibiotic treatment of 3 of the 10 and 5 of the 17 patients with polymicrobial and monomicrobial bone cultures, respectively, for whom a comparison with swab cultures was feasible.

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