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Cerebrovascular Complications of Infective Endocarditis

TO THE EDITOR—We read with great interest the article by Snygg-Martin et al. [1] that was recently published in *Clinical Infectious Diseases*, which analyzed the cerebrovascular complications of left-sided infective endocarditis using MRI and neurochemical brain damage markers. In that article, the authors found an elevated incidence of symptomatic and asymptomatic cerebrovascular complications among patients with left-sided infective endocarditis. Among the factors associated with cerebrovascular complications, the size of valvular vegetation was identified as a risk factor for symptomatic and asymptomatic complications, and only *Staphylococcus aureus* infection was associated with symptomatic complications in the microbiology analysis [1]. However, we feel that some of the issues raised in this article need to be addressed.

As noted in an article by Baddour and Bayer [2], the overall frequency of cerebrovascular complications in the study reported by Snygg-Martin et al. [1] was very high. However, the number of patients included in the study was small (60 pa-

tients), only 4 cases were due to gram-negative bacteria, and no cases were due to *Candida* species or other fungi (which are considered to be responsible for 1%–2% of all cases of infective endocarditis) [3]. In an extensive revision of the literature, Ellis et al. [4] found that 26% of patients with fungal endocarditis developed symptomatic CNS involvement. In a recently published article [5], 33 (1.2%) of 2760 cases of infective endocarditis were due to *Candida* species. In this article, Boddley et al. [5] reported that infective endocarditis due to *Candida* species was associated with a similar incidence of cerebrovascular complications, compared with infective endocarditis due to all other causes. In a recent comparative analysis published by our group [6], we retrospectively analyzed the medical literature on published cases of endocarditis due to *Candida parapsilosis* and endocarditis due to *Candida albicans*. We found that 17 (26.6%) of 64 patients with left-sided endocarditis due to *C. parapsilosis* experienced symptomatic cerebrovascular complications. Seven patients had intracranial hemorrhage, and 10 patients experienced ischemic strokes [6].

In addition, we suspect that the association reported by Snygg-Martin et al. [1] of symptomatic cerebrovascular complications with *S. aureus* infection only, as well as their finding of a high number of cerebrovascular complications, might be attributable to the small number of patients included in their study. It would be very interesting to perform a multicenter clinical trial to achieve a larger patient sample that would include more cases due to gram-negative bacteria and fungi. This could help us to better establish the relationship between the microbiological etiology of infective endocarditis and the risk of symptomatic and asymptomatic cerebrovascular complications.

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Reply to Garbino and Ambrosi

TO THE EDITOR—We thank Garbino and Ambrosioni [1] for their interest in our study of cerebrovascular complications (CVC) in left-sided infective endocarditis (IE) [2]. Our study is small, compared with some recent studies in this area [3–5], but the patients in our study were epidemiologically well matched with patients in the National Swedish Endocarditis Registry during the same period. *Staphylococcus aureus* was the only microorganism identified as a risk factor for symptomatic CVC in our study, which is in agreement with the findings of earlier studies [3–6]. As pointed out by Garbino and Ambrosioni [1], there is a need to evaluate uncommon microorganisms, such as *Candida* species or gram-negative bacilli, as potential risk factors for CVC. A much