Echocardiography in Staphylococcus aureus Bacteremia

To the Editor—In their recent article, Kaasch et al [1] propose a set of predictive criteria that, if absent, identify patients with nosocomial Staphylococcus aureus bacteremia (SAB) who are at low risk of infective endocarditis (IE) and in whom transesophageal echocardiography (TEE) may be unnecessary. This is based on posthoc analysis of 2 prospectively gathered cohorts of SAB. We submit 4 cautions regarding their findings.

First, it is not clear whether the predictive criteria were chosen prospectively and evaluated using the cohort data, or whether they were chosen because they provided the best fit to the existing data. The second approach would clearly be subject to multiple testing bias, in terms of both detection of effects and measurement of their magnitude [2].

Second, neither the predictive criteria nor the data presented address other well-recognized risk factors for IE such as preexisting valvular disease or intravenous drug use. This may limit the
applicability of the criteria to other populations with different risk factor profiles. This is partially guarded against by using geographically diverse cohorts, but in locations such as ours—South Auckland, New Zealand—the prevalence of rheumatic heart disease [3] means that the recommendations may not be applicable.

Third, only 50% of the combined cohorts’ patients underwent echocardiography, 25% had TEE, and 83% of patients diagnosed with IE underwent echocardiography. Although these rates are consistent with previously published SAB series, this incomplete information further decreases general applicability of the study’s recommendations. The authors comment that IE would probably have become clinically apparent in patients who did not undergo echocardiography. Many “patients without IE” did not have all relevant investigations to diagnose IE and were treated for a median of 14 days, which is considered adequate to treat right-sided IE [4] and might be adequate to treat some early left-sided disease.

Finally, the study does not address a critical factor in recommending any investigation, namely how it alters patient management. There is no indication of the number of patients in whom the diagnosis of IE relied on the TEE, how often TEE lead to alteration in the duration of antimicrobial therapy, or how often TEE was critical to decision making regarding surgical intervention.

An alternative approach is found in Australasian guidelines, which recommend echocardiography in all patients with SAB; however, in patients with nosocomial SAB, TEE is recommended only in those with prolonged bacteremia and a suboptimal or nondiagnostic trans-thoracic echocardiogram, a prosthetic valve or other permanent intracardiac device, or new-onset conduction disturbance, or those in whom a short course (2 weeks) of therapy is being considered [5]. This is a pragmatic approach that also reduces requirements for TEE but requires further validation.

The findings of Kaasch et al are an important contribution to our understanding of the role of echocardiography in IE, but, as the authors note, their work requires prospective validation. This should be undertaken before making major changes to practice on the basis of the proposed clinical prediction criteria.

Notes

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