Prognostic Assessment of Infective Endocarditis Using Echocardiography

What Is New?

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Staphylococcus aureus species have emerged as the most common cause of both native and prosthetic valve infective endocarditis (IE) in industrialized countries. In addition, patients with IE caused by S aureus have significantly higher mortality rates than patients with non-staphylococcal bacterial causes of IE, including Streptococci, the leading cause of IE in past decades when rheumatic heart disease was more prevalent and the onset of IE was more commonly subacute. Unfortunately, S aureus can cause IE on previously normal native valves, although antecedent valve disease (bicuspid, myxomatous, etc) remains an important risk factor in susceptible patients.

See Article by Lauridsen et al

Investigators participating in the International Collaboration on Endocarditis have provided a great deal of observational information on the presenting characteristics, evaluation, management, and early outcomes of patients with IE. Using a merged database comprising >2200 patients with definite IE from 5 countries, Miro et al reported that patients with S aureus native valve endocarditis (NVIE), compared with patients with NVIE because of non–S aureus pathogens, were more likely to die (20% versus 12%; \(P=0.001\)), experience an embolic event (60% versus 31%; \(P=0.001\)), or have a central nervous system event (20% versus 13%; \(P=0.001\)); they were also less likely to undergo early surgery (26% versus 39%; \(P=0.001\)). Multivariate analysis of factors associated with reduced survival identified age (odds ratio, 1.4; 95% confidence interval, 1.1–1.7), perianimal abscess formation (odds ratio, 2.4; 95% confidence interval, 1.1–5.6), heart failure (odds ratio, 3.9; 95% confidence interval, 2.3–6.7), and absence of surgical therapy (odds ratio, 2.3; 95% confidence interval, 1.3–4.2) as independent predictors of mortality in patients with S aureus NVIE.

In this issue of Circulation: Cardiovascular Imaging, Lauridsen et al present the results of an echocardiographic, propensity-matched subset analysis of the International Collaboration on Endocarditis-Prospective Cohort Study of patients with possible or definite left-sided NVIE, as defined by the modified Duke criteria. As previously reported, S aureus was identified as an independent predictor of 1-year mortality among patients with left-sided NVIE. Among 64 echocardiographic variables studied, there was a 3-fold higher risk of in-hospital mortality with a left ventricular ejection fraction <40% or intracardiac abscess formation. Valve perforation and intracardiac abscess were the only independent predictors of 1-year mortality. The authors acknowledge several limitations to their study. Caution is also advised in the interpretation of a retrospective, observational echocardiographic subset analysis without core laboratory confirmation of individual study findings and with reliance on data from the 2000 to 2006 era that may not reflect current management practices. Nevertheless, the aggregate findings are consistent with our current understanding of the aggressiveness of S aureus NVIE and provide further support to the American Heart Association/American College of Cardiology 2014 Clinical Practice Guidelines on Valvular Heart Disease, which recommend early surgical intervention for patients with heart failure or intracardiac abscesses.

Echocardiography plays a key role not only in the diagnosis of IE but also in risk assessment, intraoperative management, and longitudinal follow-up of affected patients. All patients with suspected IE should undergo echocardiographic evaluation on presentation. Other imaging modalities are sometimes useful to help identify the site of infection when the findings from echocardiography are ambiguous or nondiagnostic and to augment the anatomic delineation of its extent. Brain imaging is essential for patients with new neurological symptoms or signs, including headache.

IE in 2015 is a medical-surgical disease that requires multidisciplinary evaluation and management with input from cardiologists, cardiac imaging experts, infectious disease consultants, cardiac surgeons, neuroradiologists, and others, as determined by patient presentation and the emergence of complications. Many observational studies identify early cardiac surgery as an independent predictor of improved survival and \(\approx50\%\) of patients now undergo surgery before the completion of a course of antibiotics. There is widespread recognition of improved surgical repair techniques and operative survival in this patient cohort. A randomized controlled study of patients with complicated left-sided NVIE demonstrated a marked reduction in embolic complications with early surgery versus conventional management. Whether additional randomized trials of early surgery versus
conventional management with adequate power to answer questions on survival and heart failure complications can be performed remains to be seen. Clinical equipoise may already have shifted. In the interim, we will continue to rely on clinical/microbiological and echocardiographic data of the type reported by Lauridsen et al to guide therapy.

Disclosures

None.

References


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