

Role of echocardiography in infective endocarditis

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Classical diagnosis of infective endocarditis (IE) is based on the positive blood cultures, proved thrombus formation (vegetation), valvular change, and fever as specified modified Duke's criteria.

Echocardiographic evaluation plays a key role not only diagnosis of IE, but also assessment of the severity, disease progression, analysis of treatment, and prognosis. And give also useful information of surgical time and prediction of embolic risk and follow up under therapy.

All patients should perform echocardiography whenever IE is clinically suspected, as soon as possible in order to confirm or rule out the IE at the earliest opportunity. Especially when the patient has risk factors for IE, including presence of heart disease, indwelling central catheters, prosthetic material, persistent bacteremia, or infection with organisms most associated with IE should prompt evaluation.

Transthoracic echocardiography (TTE) is first line non-invasive, and easily performable modality. However transesophageal echocardiography (TEE) must also be performed in the majority of cases, because of its better image quality and better sensitivity.

In the 1994, Durack¹⁾ proposed echocardiographic criterion for IE (Duke criteria), vegetations, abscess and perivalvular involvement, and new dehiscence of prosthetic valve regard as the major criteria.

1. vegetations

The echocardiographic presence of the vegetation is the diagnostic hallmark of IE. Vegetation may presents as an oscillating or non-oscillating attached mass. The sensitivity of TTE is about 75%, however, in case of low echogenicity, very small size, and when affecting intracardiac devices or prostheses, the sensitivity may be decreased. TEE augments the sensitivity up to 85–90%, while the combination with TTE and TEE, sensitivity may be increased more than 90%.

2. Abscess

Perivalvular abscess is the second echocardiographic criterion for IE. Aortic valve is the most frequently observed and mitral-aortic fibrous area and prosthetic valve also involved. In the perivalvular area, abnormally low echogenic area without color flow may be highly suspicious. But the sensitivity may be low in the early stage.

3. Perivalvular involvement

Complicate the abscess, perivalvular pseudoaneurysm and fistulization are another major

finding when perivalvular cavity develops communicating fistula, color Doppler flow with perivalvular pulsatile echo free-space is typically observed.

4. New dehiscence of a prosthetic valve

Dehiscence of the prosthetic valve account another major criterion for IE.

When new valvular regurgitation is developed, even without vegetation or abscess, IE must be suspected. TEE has better sensitivity than TTE, especially in the prosthetic mitral valve.

5. Other findings

New valve destruction, prolapse, and aneurysm with/without perforation accounts suggestive findings of IE even not a major criterias.

Repeat TTE/TEE are crucial for the diagnosis and assessment of the patient with suspected IE, and should be performed in all patients with a moderate or high suspicion of this condition.

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