The role of echocardiography in differential diagnosis of cardiac sources of embolism

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Stroke is a leading cause of morbidity and mortality. According to pathophysiologic mechanisms, stroke can be divided into two major groups: ischemic (85%) and hemorrhagic (15%). 20% of ischemic strokes are caused by cardiac embolisms. Brain imaging (CT, MR) confirms the diagnosis, some specific characteristics seen during the imaging of the brain may suggest a distinct cardiac cause. Clinical history, examination and electrocardiogram can shed light on a potential cardiac cause of ischemic stroke. Echocardiography is a key method in the evaluation, diagnosis and management of embolic stroke (transthoracic echo, transesophageal echo, 3D echo, contrast echo).

The etiological factors of cerebrovascular events are: blood clots, tumor fragments, infected and non-infected vegetations, calcified particles, atherosclerotic debris. Cardiac sources of emboli can be divided according to embolic potential into a) **high risk:** intracardiac thrombi (atrial arrhythmias - atrial fibrillation, ischemic heart disease, non-ischemic cardiomyopathies, prosthetic valves and devices), intracardiac vegetations, intracardiac tumors, aortic atheroma; b) **low risk:** spontaneous echo contrast without clot, left ventricle aneurysm without clot, intracardiac calcifications, valvular anomalies, septal defects and anomalies.

The indications for echocardiography in patients with neurological events are: abrupt occlusion of a major peripheral or visceral artery in patients of any age; younger patients with CV events (<45 years), older patients (>45 years) with neurologic events without evidence of cerebrovascular disease or other obvious cause, patients for whom a clinical therapeutic decision will depend on the results of echocardiography.

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