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Role of echocardiographic findings and blood culture in embolic complications in patients with infective endocarditis

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Echocardiography is essential for the diagnosis of infective endocarditis (IE), treatment choice and follow-up. Prognosis in IE is multifactorial and includes both structural changes of the heart induced by IE and extra-cardiac IE complications.

Aims: Aims of the study were to analyse: 1) relation between embolic complications of IE and structural changes of the heart detected by echocardiography in IE patients; 2) association between embolic complications of IE and IE causative microorganism.

Methods: 335 patients with definitive IE from the single tertiary center were enrolled in the study between 2009–2018. Echocardiographic changes are defined in accordance with 2015 ESC guideline. Associations between embolic complication and structural heart changes, as well as between IE causative microorganism and embolic complications were tested by Chi square test.

Results: Observed embolic complication were: ischemic stroke (in 12.5% of patients), haemorrhagic stroke (2.1%), neuroinfection (9.6%), brain abscess (1.8%), discitis (3%), pulmonary embolism (1.5%), spleen abscess (7.8%) and peripheral arterial embolization (1.5%). There were several significance associations: vegetations larger than 15 mm were associated with ischemic stroke (p=0.041) and peripheral arterial embolization (p=0.05); perivalvular abscess was associated with brain abscess (p=0.037) and peripheral arterial embolization (p=0.019). Staphylococcus aureus isolated from blood cultures was associated with discitis ($p<0.001$), brain abscess ($p<0.001$) and neuroinfection ($p<0.001$). Bacterias from HACEK group were associated with peripheral arterial embolisation ($p<0.001$) and non-HACEK bacterias were associated with ichemic stroke (p=0.016). Patients with more than one isolated bacteria from blood culture had more often spleen abscess (p=0.003) and ichemic stroke (p=0.049).

Conclusion: Results point that large vegetations, but also perivalvular abscesses are coupled with higher rate of embolic complications in patients with IE. Staphylococcus aureus, HACEK group and non-HACEK bacteria are, more than other causative IE microorganisms, associated with embolism. These results might be clinically important for treatment chose and prognosis of the patients with IE.