Left atrial appendage in acute coronary syndromes: small but not insignificant

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In this issue of *Journal of Geriatric Cardiology*, Dr. Piotrowski and colleagues explored the function of the left atrial appendage (LAA)—a small, blind-ended structure of the heart which has been often ignored by cardiologists. Although the function and relationship between LAA and left ventricle (LV) in healthy and abnormal conditions, for instance, in atrial fibrillation or myocardial infarction, have been studied for years by physiologists and clinicians. Nevertheless, just like what had the authors pointed out that in ischemic heart disease, ventricles rather than atria have received far more attention for many years; therefore much less is known about the function of LAA, especially in acute coronary syndromes.

In this article, the function of LAA was studied in 16 patients (65.9±9.9 years old), 10 days after an acute coronary event using biplane transesophageal echocardiography. The results indicated that both the longitudinal and transversal dimensions as well as the maximal area of the left atrial appendage were significantly higher in patients with acute coronary syndromes than in the controls. LAA ejection fraction was also higher in patients with acute coronary syndromes. The peak emptying flow and filling flow of LAA were significantly higher in patients of the study group than of the control group.

LAA is known to be distinct from the body of the left atrium. The physiology of LAA is also distinct from the left atrium (LA) in many aspects. LAA is a highly contractile pump, a more distensible chamber and also a place where thrombi often develop and spontaneous echocardiographic contrast is often present. It is also recognized that LAA possesses two functions: to be a reservoir and to be a pump. It is very impressive in this research project to select LAAmin, LAAavg, LAAmax, LAAmax as the planimetric parameters to evaluate the LAA's function as a reservoir; and Doppler parameters (LAAE, LAAF) and EF_LAA to evaluate LAA's function as a pump. Data of this series indicated that two weeks after the acute coronary syndrome, the LAA still maintained the function of a reservoir as well as a pump, and even worked at a higher level than in the controls. Since transesophageal echocardiography (TEE) is contraindicated in acute ischemia and in symptomatic patients, this is the reason the authors used TEE to evaluate LAA only for the stable, asymptomatic patients. The large LAA compliance seems to contribute greatly to the prevention of an elevation in intra-atrial pressure and thereby pulmonary congestion in this pathological condition.

In recent years, the increasing incidence of cerebral stroke and myocardial infarction is a stimulus for new therapeutic strategies and for further study on the function of LAA, LA and LV as well as the relationship among them, particularly in patients with myocardial infarction and cerebral embolic events. Even though the number of patients studied in this series was not very large, however, based on the data obtained in this study and those collected from other related researches, we presume that TEE parameters reflecting LAA function should be emphasized, and TEE analysis of LAA emptying flow, which has been proven to be highly reproducible, might be also helpful in the assessment of a thrombo-embolic risk in the brain.

References