A Sensitive Marker for Left Atrial Dysfunction as a Risk Factor of Cardioembolic Stroke after Cessation of Paroxysmal Atrial Fibrillation

Key words: left atrial dysfunction, cardioembolic stroke, paroxysmal atrial fibrillation, transesophageal echocardiography

Not only chronic atrial fibrillation but also paroxysmal atrial fibrillation (PAF) is known to be a risk factor of cardioembolic stroke (CES). The value of transesophageal echocardiography (TEE) in addition to established clinical risk factors for stroke is controversial in patients with PAF. Altered hemostasis favoring thrombosis may contribute to formation of left atrial appendage (LAA) thrombus, but these conditions remain ill defined particularly in PAF (1). Left atrial mechanical remodeling has been established to play an important role in thrombogenesis as a potential cardiac source of embolism in patients with PAF (2), while it has not been clarified whether or not LAA dysfunction contributes to the occurrence of CES because of lack of data on the comparison of LAA function after cessation of PAF between patients with and without CES. Kaneko et al (3) compared parameters for LAA dysfunction on TEE between 17 patients with and 16 without CES after cessation of PAF. Kaneko et al showed that there is no significant difference in left atrial dimension or LAA-eV between the patients with and without CES after cessation of PAF (3).

As for parameters for LAA dysfunction on TEE, they investigated left atrial dimension, LAA area, emptying flow velocity of the LAA (LAA-eV), LAA fractional area change (LAA-FAC), and left atrial spontaneous echo contrast (LA-SEC). They did not show any significant difference in left atrial dimension (4) or LAA-eV (5), widely used indices between the two groups, while they could show significantly larger LAA area, smaller LAA-FAC, and more frequent LA-SEC in patients with CES than without CES. Kaneko et al (3) compared parameters for LAA dysfunction on TEE between 17 patients with and 16 without CES after cessation of PAF.

See also p 1077.

According to the Stroke Prevention in Atrial Fibrillation (SPAF) investigators, left ventricular wall dyskinesia and left atrial dilatation on TEE are risk factors for stroke in patients with non-valvular atrial fibrillation (NVAF) (4). In addition, many studies have reported that decreased LAA flow velocities are predictors for stroke in patients with NVAF (5–7). SPAF III investigators have also reported that LAA peak flow velocities correlate with thromboembolic risk in NVAF patients (8, 9). However, it has not been elucidated whether left atrial dilatation or LAA flow velocities can be a marker for the risk of CES also in patients after cessation of PAF. Indeed, Kaneko et al showed that there is no significant difference in left atrial dimension or LAA-eV between the patients with and without CES after cessation of PAF (3).

In contrast, they demonstrated significantly smaller LAA-FAC in patients with CES than without CES after cessation of PAF (3). Some previous studies have reported that LAA-FAC can detect milder or earlier LAA dysfunction than LAA-eV (10, 11). Panagiotopoulos et al (11) demonstrated that patients with CES in sinus rhythm showed a significant decrease of LAA-FAC compared with control subjects, while patients with CES in atrial fibrillation showed a significant reduction of LAA-eV. In addition, they observed that patients with LA-SEC, thrombus, or both showed further reduction of LAA-FAC and LAA-eV, indicating a more advanced stage of dysfunction. If LAA-FAC is a more sensitive marker for LAA function than other markers such as LAA-eV, it could be useful to determine whether or not to continue warfarin treatment. In order to establish the value of this marker for LAA function on TEE as a sensitive and reliable predictor for CES, it may be worthwhile to evaluate in a large prospective study for stroke prevention in patients after cessation of PAF.

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