Reviewer's report

Title: Motion of left atrial appendage as a determinant of thrombus formation in patients with a low CHADS2 or CHA2DS2-VASc score receiving warfarin for persistent nonvalvular atrial fibrillation

Version: 1 Date: 28 November 2012

Reviewer: Albert A Varga

Reviewer's report:

The aim of the study by Koji Ono et al. was to “define the independent determinants of left atrial appendage (LAA) thrombus among various echocardiographic parameters measured by vector velocity imaging (VVI) in patients with nonvalvular AF receiving warfarin, particularly in patients with a low CHADS2 or CHA2DS2-VASc score.” They studied 260 patients suffering of nonvalvular AF with VVI. The final conclusion of the Authors was that: “LAA thrombus formation depends on LAA contractility. AF patients with reduced LAA contractile function (LAAEF #21%) requires strong anticoagulant therapy to avoid thromboembolic events regardless of a low CHADS2 or CHA2DS2-VASc score (#1).”

The paper is reasonably well written but I have some questions and comments.

1. Introduction section: the statement: “However, it is well known that some AF patients that have PT-INR within the therapeutic range or a low CHADS2 score still suffer from thromboembolism” is not supported by references. Please give at least one reference.

2. “The average of the two PT-INR measurements was used for analysis”. This is a little bit problematic, since one subject could have a „low” INR one month prior the echo examination, and „high” INR at the time of echo exam, and the calculation will be obtained with an „optimal” (averaged) INR value. Hypothetically, during the first period, this patient could develop a thrombus in the LAA. Can you comment this small laxity?

3. In the methods section the Authors explained, that the LAA volumes were determined using a Simpson’s method and that “although an autopsy study reported that the LAA is usually a multilobed structure (17), three-dimensional TEE revealed that the LAA was round in vivo (18).” However, reference 18 is a case report. Recently, DiBiase et al (J Am Coll Cardiol. 2012;60:531-8) evaluated a large series of AF patients with MRI and CT and categorized the findings in at least 4 different LAA morphologies. Please, discuss.

4. Results: despite the anticoagulation, surprisingly high percentage of the patients had thrombus in the LAA. Please, explain! The target INR is achieved only in the 2/3 of the patients. Did this influence the data?

5. I would advise the Authors to skip the separate analysis of the CHADS-VASC
group, since in this group only 5 patients had a thrombosis and the statistics is underpowered.

6. Please, give an explanation for the creation of the 3 models for the multivariate analysis? In model clinical variables were included, but only INR and the duration of the AF were mentioned. What about the other important clinical variables which could affect the development of thrombi in the LAA?

7. The Discussion section is a little bit rough-and-ready. The first part of the second paragraph on page 10. is superfluous (TEE is known as the most sensitive…

8. In the same paragraph: “Performing TEE in patients with a low CHADS2 score is controversial.” Why?

9. The section “LAA thrombus in patients with a low CHA2DS2-VASc score” is more a description than an explanation of the findings.

10. Please add to the discussion the paper by Ayirala et al. Echocardiographic predictors of left atrial appendage thrombus formation. JASE. 2011;24:499-505

11. There are numerous grammatical and typographical errors throughout the manuscript.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

No conflict of interest declared