Reviewer's report

**Title:** Feasibility and Diagnostic Power of Transthoracic Coronary Doppler for Coronary Flow Velocity Reserve in Patients Referred for Myocardial Perfusion Imaging

**Version:** 1  **Date:** 27 February 2008

**Reviewer:** Rosa Sicari

Reviewer's report:

In the present study Maret et al describe the feasibility of transthoracic Doppler for coronary flow velocity reserve in patients with known or suspected CAD. The study confirms the ability of CFR to identify a subset of patients without disease with a high negative predictive value (88%). The study is interesting and the conclusions are sound, but there are a few issues that authors should address.

1. The feasibility of the technique is lower than any previous report. This is a major limitation of the study since a 70% feasibility would make the technique unsuitable for any routine clinical use. Several factors may affect the feasibility: technology employed, operator expertise and experience and type of stressor. Please address each single item.

2. CFR accuracy is not validated versus coronary angiography but vs. myocardial perfusion scintigraphy. Therefore, it is a concordance study between the two techniques. Both techniques suffer from the same limitation: they are unable to distinguish between micro and macrovascular coronary disease, making perfusion an imperfect gold standard for the recognition of CAD. More appealing for clinical use would be the assessment of both wall motion and CFR. The assessment of CFR adds sensitivity for LAD disease with a modest loss in specificity. In reality, the inherently quantitative information of LAD flow reserve allows a stratification of the response, integrating many different tests into one: greatly reduced CFR (<1.5) yields extraordinary specificity whilst mildly reduced CFR (<2.0) offers outstanding sensitivity. Do authors have any data on wall motion analysis? Have they tried different cut-off values?

3. Authors define as abnormal patients with fixed or reversible defects. It would be interesting to separate them and have the CFR measurements.

4. When authors in table define the actual number of CAD patients (CAD) how was diagnosis made: clinical history or coronary angiography?

5. Authors provide in figure 4 individual CFR in the population separating on the basis of normal and abnormal SPECT. The individual CFR largely overlaps in the two groups. Please provide mean values and statistical differences, if any.

6. Withdrawal of vasoactive medication was not required in the study protocol. Recent studies employing an invasive and non-invasive approach to CFR assessment demonstrate that beta-blockers are able to increase CFR (Togni M, Vigorito F, Windecker S, Abrecht L, Wenaweser P, Cook S, Billinger M, Meier B,


8. The prognostic value of CFR has been recently demonstrated in diabetic patients and negative stress for wall motion criteria. This is one of the conditions in which CFR may be reduced in the absence of CAD.

What next?: Accept after minor essential revisions

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.