Reviewer's report

Title: Measurement of Coronary Calcium Scores or Exercise Testing as Initial Screening Tool in Asymptomatic Subjects at Risk for Coronary Artery Disease: an Evaluation Study

Version: 1 Date: 25 January 2007

Reviewer: Alexander Leber

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General Remarks

The authors compared the predictive power of excercise testing and coronary calcium scores to detect significant CAD (primary endpoint) and the need for revascularisation procedures (secondary endpoint) in asymptomatic patients with ST-T abnormalities in the resting ECG. They found that in 11/16 patients revealing Scores >400 and in 13/33 patients with an abnormal stress test the primary endpoint was present. They concluded that a calcium score >400 reveal a higher diagnostic yield to detect significant CAD than excercise testing.

Negative aspects:
1. The study population is rather small with only 24 patients who showed significant CAD.
2. The study is significantly affected by a preselection bias as only asymptomatic patients with ST-T abnormalities in the resting ECG were included. These ECG changes already suggest a relatively high pretest likelihood for significant CAD. Therefore the results cannot be translated to a general asymptomatic patient population amd I disagree to the conclusion drawn by the authors, that CAG is indicated in patients with scores >400. The high specificity for high calcium scores to detect significant CAD in the present patient cohort is similar to studies comparing calcium scoring and invasive angiography in symptomatic patients. This underscores the fact that due to the inclusion criteria asymptomatic patients with a relatively high likelihood (similar to that of symptomatic patients) for significant CAD were investigated. This needs to be discussed.
3. No study has yet demonstrated that PCI or CABG improve the long term prognosis compared to conservative medical treatment even in stable symptomatic patients. Moreover the rate of hospitalisations and intervention related complications is higher in patients treated by PCI or CABG. So I doubt that PCI will improve prognosis in asymptomatic patients and thus invasive testing should be seriously questioned. The authors should point out that in patients with scores >400 aggressive secondary prevention strategies should be applied in order to improve prognosis rather than recommending an invasive test.

Positive aspects:
1. To best of my knowledge the approach to compare stress testing and calcium scoring to identify significant CAD is unique and not yet investigated and therefore of high clinical relevance.
2. The findings question the current recommendations concerning the interpretation of positive stress tests, however the results presented here are significantly discrepant to well published accuracy studies concerning bicycle exercise ecg-testing. This needs to be discussed.
3. The fact that FFR was done to determine the functional relevance of a coronary stenosis is an obvious strength of the paper.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

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, but I do not feel adequately qualified to assess the statistics.