What If Regular Exercise Were as Good as a Stent for Stable Angina?

Shelley Wood

September 8, 2009 (**Barcelona, Spain**) - Investigators for the multicenter **PET** study were keen to build on the surprising findings from their pilot trial: that 12 months of exercise training was just as good as PCI for myocardial perfusion and symptom relief in patients with stable angina and even better in terms of preventing cardiovascular events.

Those hopes, however, were dashed when the multicenter PET study ground to a halt due to a lack of enthusiasm among patients and enrolling centers.

But in new findings presented by **Dr Rainer Hambrecht** (Klinikum Links der Weser, Bremen, Germany) at the **European Congress of Cardiology 2009 Congress**, combined data from the PET pilot study and the aborted PET multicenter trial suggest that regular exercise training is superior to PCI at preventing subsequent cardiovascular events.

The original PET study [1] randomized 102 patients to either exercise or PCI and reexamined patients after 12 months using coronary angiography, technetium-99m scintigraphy, and ergospirometry, as well as a range of clinical end points. Results, which were published in *Circulation* in 2004, showed clear and comparable improvements in symptoms and myocardial perfusion from baseline with both treatment strategies, and a trend toward better event-free survival in the training group at both 12 and 48 months.

"Our expectation was that exercise training would not be inferior to PCI; however, what we saw after 12 months was a clear, significant improvement in exercise over PCI in patients with stable CAD," Hambrecht told **heart*wire***.

Exercise benefits

Inspired by the PET pilot, Hambrecht et al launched the PET multicenter trial at four hospitals in Germany, Austria, Switzerland, and Romania. By design, patients were randomized either to PCI or to two weeks of a supervised exercise training program every day, made up of five short periods of exercise daily. Patients were then given bicycles at home and asked to exercise on them every day, plus attend a supervised exercise program one or two times per week. The bikes, Hambrecht told **heart*wire*** , were equipped with sensors that monitored the amount and duration of exercise and ensured that it was actually the study participant--and not another family member--who was using the equipment.

But according to Hambrecht, the trial had major problems recruiting and was halted with just over 100 of the original 400 patients it had hoped to enroll. The study had plenty of funding; enrollment problems lay with both the recruiting centers and the patients themselves, he said. "There was some reluctance among the centers to join us in performing this study and also difficulties recruiting patients for the study" and explaining the randomization process. "If you get the stent you are free of symptoms within a few minutes, [whereas] in the training group, you have to work a lot, for several months, to reduce the angina threshold."

As with the pilot study, there were striking improvements with both PCI and exercise training in angina class and improvements in event-free survival that were nonsignificantly better for the training patients.

However, when the patients from both the multicenter and pilot studies were combined for a total of 202 patients with two-year follow-up, investigators achieved the statistical significance not met in the multicenter trial, Hambrecht reported. In a pooled analysis of event-free survival, 21 events occurred in the training group as opposed to 32 events in the PCI group (p=0.039). The differences speak to the direct benefits of exercise on the cardiovascular system globally, as opposed to the palliative, more localized benefits of PCI. Whereas both strategies improve myocardial perfusion, angina threshold, and exercise capacity, only exercise improves endothelial function and slows disease progression, he noted. Moreover, he stressed, improvements in both arms were seen on top of optimal medical therapy.

Forces work against exercise

In an interview with **heart*wire*** , Hambrecht acknowledged that there are multiple forces working against a scenario in which regular exercise is prescribed instead of stenting. For one, patients are not motivated to take responsibility for improving their own cardiovascular health--even if it means better event-free survival. For another, encouraging exercising is financially less appealing for hospitals, Hambrecht observed: "That was my feeling, that hospitals were reluctant to participate in this study, because they derive revenue from PCI procedures."

Hambrecht believes his data support calls to take the time between the diagnostic angiogram and the revascularization procedure to discuss the options with the patient, rather than stenting every patient.

"We have enough evidence from several studies, including **COURAGE** and our PET studies, comparing PCI vs more conservative strategies, and the data are quite convincing that PCI is not superior" in stable angina, he concluded.

References

Hambrecht R, Walther C, Möbius-Winkler S, et al. Percutaneous coronary angioplasty compared with exercise training in patients with stable coronary artery disease: a randomized trial. *Circulation* 2004; 109:1371-1378.