

# Cardiac Catheterizations Up Sharply in Women

BY BRUCE JANCIN

ATLANTA — Campaigns aimed at increasing awareness among physicians and the public that heart disease is underdiagnosed and undertreated in women appear to be paying off.

In a new report from a large contemporary national registry, women with chest pain were twice as likely as were men to be referred for cardiac catheterization following a noninvasive imaging study, Dr. Marcelo Di Carli said at the annual meeting of the American College of Cardiology.

That's a dramatic turnaround from the situation just a few years ago, when an abundance of studies documented that cardiac catheterization was significantly underused in women.

This major shift is most likely a consequence of campaigns such as the American Heart Association's "Go Red for Women" as well as other programs designed to increase public and physician understanding of how serious a problem heart disease is in women, ac-

ording to Dr. Di Carli, director of the noninvasive cardiovascular imaging program at Brigham and Women's Hospital, Boston.

"It seems the pendulum has swung in the opposite direction," he said. "The results of this study suggest that it is

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**Major Finding:** Physicians referred 13% of the women but only 6% of men for cardiac catheterization within the next 90 days of cardiac imaging.

**Data Source:** A report on 891 women and 812 men at 40 diverse academic and nonacademic U.S. sites who participated in the Study of Myocardial Perfusion and Coronary Anatomy Imaging Roles in CAD (SPARC) registry.

**Disclosures:** Dr. Di Carli is co-principal investigator of SPARC, which is supported by the National Heart, Lung, and Blood Institute and four medical companies. He indicated he has no relevant financial interests.

possible, through widespread public awareness campaigns, to change well-entrenched practice by reaching a diversity of physicians who, based on this information, altered their practice patterns."

Dr. Di Carli reported on 891 women and 812 men at 40 diverse academic and nonacademic U.S. sites who participated in the Study of Myocardial Perfusion and Coronary Anatomy Imaging Roles in CAD (SPARC) registry. All had chest

pain and underwent noninvasive cardiovascular imaging with coronary CT angiography, positron-emission tomography (PET), and/or single-photon emission computed tomography (SPECT).

Thereafter, physicians referred 13% of the women but only 6% of men for cardiac catheterization within the next 90 days.

In a multivariate analysis adjusted for variables including age, diabetes, type of noninvasive imaging test, and the test findings, female gender stood out as an independent predictor of referral for cardiac catheterization, with a twofold increased likelihood.

It is impossible to say with certainty whether the increased rate of referral of women for catheterization documented in this study represents overuse of the procedure, appropriate use, or simply underutilization in men, he said. That's because there are no practice guidelines addressing when it is appropriate to send patients for catheterization. However, he believes there was a reasonably high rate of appropriate catheterization, because two-thirds of the 163 angiograms ordered in the SPARC participants showed obstructive coronary disease resulting in a revascularization procedure. Moreover, this rate was similar in women and men.

This 66% rate of revascularization in patients referred for cardiac catheterization is glaringly at odds with a widely publicized study published by other investigators only a few days before Dr. Di Carli's Atlanta presentation. In the National Cardiovascular Data Registry study of nearly 400,000 patients undergoing cardiac catheterization at 663 U.S. hospitals, slightly over one-third were found to have obstructive coronary disease (*N. Engl. J. Med.* 2010;362:886-95).

The most likely explanation for these discordant findings, in Dr. Di Carli's view, lies in the fact that the National Cardiovascular Data Registry study covered the years 2004-2008, while SPARC is a more recent series reflective of current practice. It is his impression that cardiac catheterization practices were different in the early and middle years of the decade.

In an interview, Dr. Janet Wright, ACC senior vice president for science and quality, said she agrees with Dr. Di Carli's assessment that the awareness campaigns are the probable explanation for the recent sharp uptick in cardiac catheterization in women.

"I can't think of any other driver for that dramatic a shift in what had already been documented as a pattern of practice," she added. ■

## Looser Heart Rate Control Found Beneficial in Atrial Fib

BY BRUCE JANCIN

ATLANTA — A lenient heart rate target of less than 110 bpm at rest in patients with permanent atrial fibrillation is as effective in preventing cardiovascular morbidity and mortality as is the tight rate control strategy recommended in current guidelines, and far more convenient both for patients and physicians, according to a new study.

"Our study suggests that lenient rate control may be adopted as the first-choice rate control strategy in patients with permanent atrial fibrillation, and this applies both for high- and low-risk patients. ... If a patient comes into the office with permanent atrial fibrillation, a target resting heart rate just under 110 bpm on a 12-lead ECG is good enough," Dr. Isabelle C. Van Gelder said in presenting the findings of the Rate Control Efficacy in Permanent Atrial Fibrillation: a Comparison Between Lenient Versus Strict Rate Control II (RACE II) trial at the annual scientific session of the American College of Cardiology.

Based upon the results of earlier clinical trials, most physicians have adopted a strategy of rate control over rhythm control as initial therapy for patients with atrial fibrillation. And the most widely employed rate control strategy today is the one recommended in the current ACC/American Heart Association/European Society of Cardiology guidelines: strict rate control with a resting heart rate below 80 bpm and a heart rate less than 110 bpm during moderate exercise.

The assumption underlying the guideline-recommended strict rate control strategy—one that is not evidence based—has been that a lower heart rate target should result in fewer symptoms and a lower cardiovascular event rate. RACE II shows that assumption is incorrect, according to Dr. Van Gelder of the University of Groningen (the Netherlands).

RACE II randomized 614 patients with permanent atrial fibrillation at 33 Dutch medical centers to strict or lenient rate control to be achieved with beta-blockers, calcium channel blockers, and/or digoxin. The primary study end point was a composite of cardiovas-

## VITALS

**Major Finding:** At 3 years, the composite end point occurred in 13% of the lenient rate control group compared to 15% of those assigned to strict rate control, meaning the lenient rate control strategy was statistically noninferior.

**Data Source:** RACE II randomized 614 patients with permanent atrial fibrillation at 33 Dutch medical centers to strict or lenient rate control to be achieved with beta-blockers, calcium channel blockers, and/or digoxin.

**Disclosures:** The RACE II trial was supported by the Netherlands Heart Foundation and unrestricted grants from seven pharmaceutical companies. Dr. Van Gelder disclosed serving as a consultant to Sanofi-Aventis, Boehringer Ingelheim, and Cardiome. Dr. Dorian is a consultant to those companies as well as St. Jude Medical.

cular death, heart failure hospitalization, stroke, systemic embolism, life-threatening arrhythmia, and bleeding. At 3 years of follow-up, the composite end point occurred in 13% of the lenient rate control group compared to 15% of those assigned to strict rate control, meaning the lenient rate control strategy was statistically noninferior. The lenient rate control approach was similarly effective in patients at high baseline cardiovascular risk—those with a CHADS<sub>2</sub> score of 2 or more—and in those at lower risk.

Ninety-eight percent of patients in the lenient control group met their heart rate target, as did 67% in the strict control group. The lenient control group collectively had 75 outpatient visits related to atrial fibrillation; the strict control group had 684. A total of 207 (68%) of the 303 patients in the strict rate control group

were treated with two or three rate control drugs, compared with 93 (30%) of the 311 patients in the lenient control arm. The dosages required in the strict control arm were about one-third higher, as well.

At the end of follow-up, 46% of patients in each study arm had atrial fibrillation symptoms, 70% were in NYHA functional class I, and 23% were in class II.

Dr. Van Gelder said she and her coinvestigators were concerned that the lenient rate control group would have a higher incidence of heart failure due to tachycardia-mediated cardiomyopathy. That did not transpire. Heart failure rates in the two study arms were similar.

"I think the explanation is that a resting heart rate just below 110 bpm is not high enough to cause tachycardia-mediated cardiomyopathy. Or else it may not be the higher heart rate but the irregular rhythm that's the major cause of heart failure, and the irregular rhythm rate was the same in both groups," she noted.

Simultaneously with Dr. Van Gelder's presentation in Atlanta, the RACE II results were published online (*N. Engl. J. Med.* 2010 March 15 [10.1056/NEJMoa1001337]). In an accompanying editorial, Dr. Paul Dorian of the University of Toronto stressed that "the RACE II study does not suggest that ventricular rate control is not needed, only that the conventional therapeutic target needs to be reassessed. At a minimum, the study indicates that reflexive, 'recipe-based' adherence to a rate control target does not seem sensible. ...

This important study serves as a reminder that it is better to treat the patient and not the electrocardiogram" (*N. Engl. J. Med.* 2010 March 15 [10.1056/NEJMe1002301]). ■