

Protocol Helps Identify Candidates for CRT

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FROM THE ANNUAL MEETING
OF THE AMERICAN SOCIETY OF
NUCLEAR CARDIOLOGY

PHILADELPHIA – A protocol for using serial gated single-photon emission computed tomography with a single injection radiotracer helped in patient selection for cardiac resynchronization therapy and guided left ventricle lead placement, investigators at the University of Pittsburgh reported.

The phased analysis protocol involved leaving the cardiac resynchronization therapy (CRT) device inactive at the time of implantation, injecting a single dose of radiotracer, and acquiring a resting gated single-photon emission computed

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tomography (SPECT); then activating the CRT and acquiring another gated SPECT, said Dr. Mati Friehling. The study was selected as winner of the ASNC's Young Investigator Award Competition.

"There is great value of phase analysis which suggests a new technique to evaluate LV synchrony," Dr. Friehling said. "There's a linear relationship between the count changes throughout the cardiac cycle and myocardial wall thickening."

The count changes are key to determining the precise mechanical contraction for CRT, he said.

"One question is, why do we care about the acute response?" Dr. Friehling said. "When we put a CRT device in, based on conventional criteria, we assume that acute resynchronization occurs, and this will give us a long-term benefit, but not always."

"We decided to use a gated SPECT-based approach because it gives us a congruent evaluation of the patient, including function and scar location and scar extent, which may be helpful for actual LV lead position."

The single-dose radiotracer was devised to limit radiation exposure, he said.

The study analyzed a total of 44 patients after CRT device implantation, 18 of whom had improvement of dyssynchrony, 11 of whom had no change, and 15 of whom actually had deterioration of dyssynchrony, Dr. Friehling said.

The leads were concordant in 22 patients, only 1 of whom actually worsened. In the remaining 22 with discordant leads, 8 had improvement or were unchanged, and 14 saw their dyssynchrony worsen, according to Dr. Friehling.

"There's a very high specificity and

positive predictive value for an improving or unchanged synchrony," said Dr. Friehling.

"The responses are based on small changes in LV volume injection fraction according to echocardiography, which can be highly variable. We used harder end points such as death, CHF hospitalizations, ICD shocks, and viability of patients secondary to HF failure symptoms," he noted.

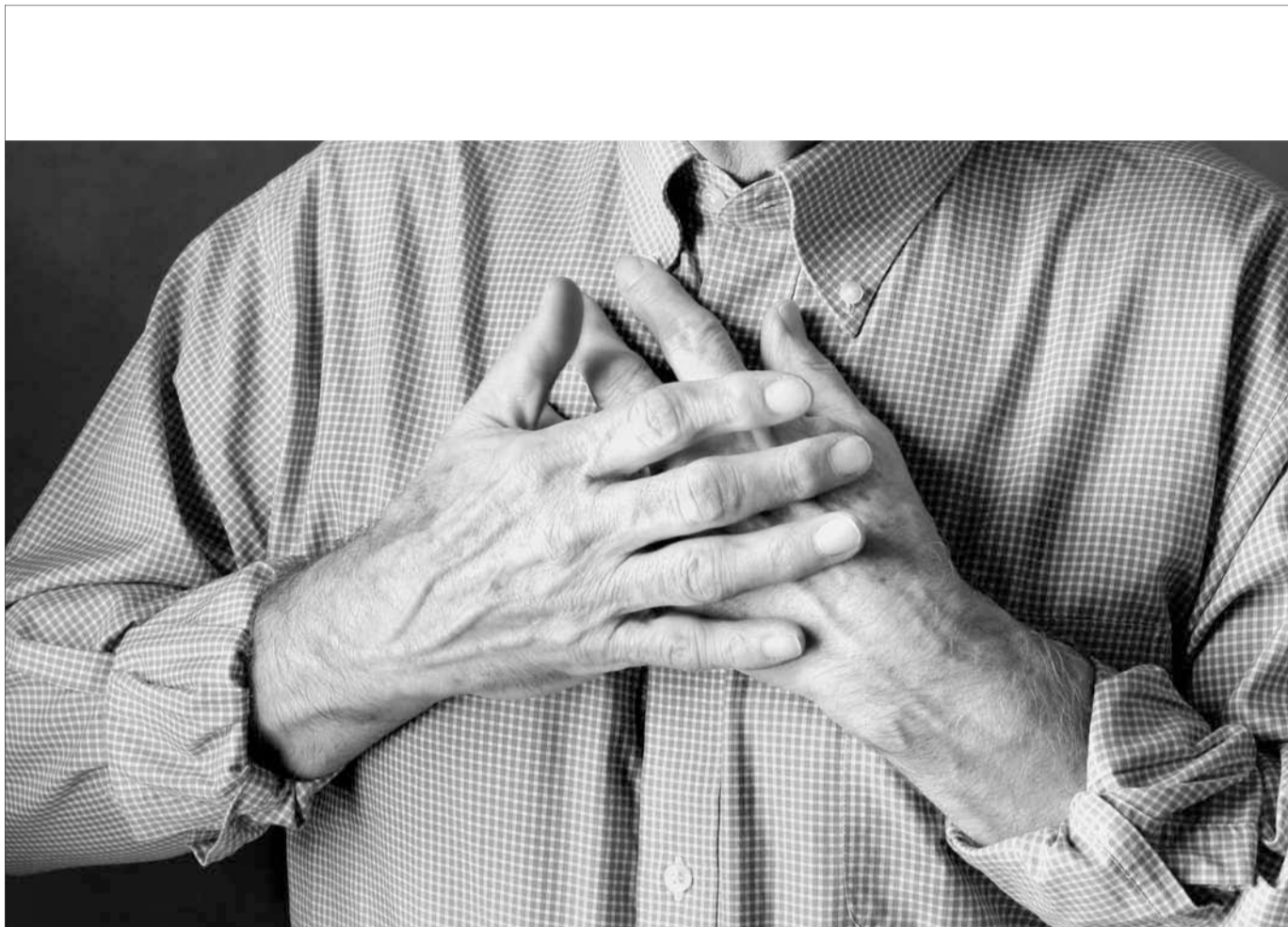
Five deaths were reported among the 29 patients in the study group who had improved or unchanged dyssynchrony, Dr. Friehling said, while among the 15 patients who had deterioration of dyssynchrony, 8 had a cardiac event.

"Serial imaging based on conventional criteria can result in acute worsening of synchrony in some patients," Dr. Friehling said.

"The acute change in synchrony does

appear to be associated with long-term outcome, and we may be able to use a baseline SPECT study to guide LV lead placement and to predict the acute response. Therefore SPECT may be a valuable tool for selecting patients for CRT."

Dr. Friehling had no disclosures, but two of his coinvestigators disclosed relationships with Emory Cardiac Toolbox. ■



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