

ICD Components Can Cause Contact Dermatitis

BY SHERRY BOSCHERT

San Francisco Bureau

SAN FRANCISCO — Allergy to the materials in an implanted cardioverter defibrillator can cause a contact dermatitis over the implantation site that may be mistaken for infection, Dr. Margaret Lee-Bellantoni said.

Although allergic reactions to implantable cardioverter defibrillators (ICDs) are rare, the rapidly increasing number of patients being given ICDs probably will mean more cases of defibrillator dermatitis. "We do expect to see more," she said at the annual meeting of the American Contact Dermatitis Society.

During 1996-2001, the number of patients with ICDs increased by 24% annually, noted Dr. Lee-Bellantoni of Tufts-New England Medical Center, Boston.

She described the case of a 57-year-old man with a history of coronary artery disease and MI who received an ICD to manage ventricular tachycardia. His first ICD, implanted in 1991, was replaced in 1994 and again in 1997 and 2004. One week after the 2004 ICD was placed in the extraperitoneal space of the man's abdomen, he developed a wound dehiscence near the center of the incision site. He had no fever, chills, or leukocytosis but developed erythema over the ICD area. The dehiscence healed, but the erythema persisted, so he was treated with oral antibiotics for presumed infection. The erythema expanded over the ICD implantation, still with no pain, pruritus, or fever. The patient was hospitalized twice with a diagnosis of infection of the left lower abdomen and was given IV antibiotics, including vancomycin.

In the second hospitalization, the patient came to the attention of dermatologists, who took a tissue biopsy. The results were nondiagnostic but consistent with possible hypersensitivity. Culture was negative for bacteria and fungi.

"Although the cardiologists knew there was something



A 57-year-old man developed wound dehiscence and erythema at the site of his ICD-associated incision.

weird going on, they were still essentially worried about infection. But the dermatologists were worried about hypersensitivity reaction," Dr. Lee-Bellantoni said.

The dermatologists obtained an ICD materials test kit from the ICD manufacturer containing materials from the 11 components that come into contact with patient tissue. They patch-tested the patient to the plastics, silicones, epoxies, and other materials in the kit, as well as to a standard group of preservatives, fragrances, and other potential allergens.

The results showed evidence of contact hypersensitivity to polyurethane 75D and peroxide-cured silicone rubber, which were present in the patient's ICD. This information helped cardiologists choose a different ICD for him. After replacement of the offending ICD with the new one in a different location, the erythema gradually resolved.

The cost of the patient's two hospitalizations and antibiotic treatment totalled \$9,544. The patch test, which cost \$1,286, was "really cost effective," Dr. Lee-Bellantoni said. Plus, "you really can't overestimate the emotional



The erythema had largely resolved by 7 months, after placement of a new ICD at a different location.

cost to the patient in terms of stress over the possibility of resistant infection, nosocomial infection, and work time lost."

Suspect contact allergy in the absence of proven infection in a patient with erythema at the ICD site, she advised.

Amine catalysts used in polyurethanes and epoxy systems as hardeners and curing agents are very strong sensitizers. Polyurethanes and epoxies may be used for surface coatings of various manufactured items in general.

The patient had a history of exposure to these and other potential sensitizers in his work as a motorcycle shop manager and in previous woodworking environments. Regardless, multiple ICD placements could, by themselves, be enough to sensitize someone to these agents, she said.

So far there are only 30 cases in the literature of hypersensitivity to ICDs or to pacemakers. If a hypersensitivity reaction is suspected in patients with these devices, a negative patch test does not necessarily rule out sensitization because it is difficult to get a response to the tiny piece of material used in the tests, she cautioned. ■

PHOTOS COURTESY DR. PAMELA SCHEINMAN

Regular Moderate Exercise Prevents Sudden Cardiac Death in Women

BY DEEANNA FRANKLIN

Associate Editor

Sudden cardiac death due to physical exertion is extremely rare in women, and the small increase in risk can be minimized through regular exercise, reported Dr. William Whang of Massachusetts General Hospital, Boston, and his colleagues.

They used prospective data from the Nurses' Health Study cohort of female nurses (mean age 53 years in 1986) to analyze cases of sudden cardiac death.

Starting in 1986, study questionnaires asked participants about the average time spent per week doing such activities as walking briskly, jogging, running, biking, swimming, playing tennis or squash, and participating in aerobics or other sports, as well as yard work and housework. In 1992, information was also gathered on average time spent doing lower-intensity exercises, such as yoga. Exercise intensity was based on self-assessments of time spent doing moderate to vigorous exercise (JAMA 2006;295:1399-403).

There were 288 sudden cardiac deaths among the 84,888 women who completed the 1980 questionnaire. "Of these, only nine deaths (3.1%) occurred during an episode of moderate to vigorous exertion, and only three of these occurred during activities that would be considered exercise," the researchers wrote.

These nine deaths happened during yard work, swimming, physical therapy, housework, and shoveling snow, among participants who reported exercising at moderate to vigorous intensity at least 4 hours per week.

Among participants who did not report any moderate to vigorous exercise on a weekly basis, there were 74 sudden cardiac deaths. There were 46 deaths among those exercising at this intensity for 0-1.9 hr/week, and 28 deaths among participants exercising 2-3.9 hr/week.

The relative risk (RR) of exertion-related sudden cardiac death during moderate to vigorous exertion was calculated to be "modestly elevated" at 2.38. However, this "transient"

elevation in risk was no longer significant for women reporting 2 or more hours per week of moderate to vigorous exertion—they had an RR of 1.49. Women with 2 or fewer hours per week of exertion had an RR of 8.98, and women who exercised 4 or more hours per week had an RR of 0.41.

Even after controlling for factors such as age, smoking status, body mass index, and menopausal status, the researchers said this trend persisted.

Data from the Physician's Health Study (N. Engl. J. Med. 2000;343:1355-61) showed that the relative risk for men during an episode of vigorous exertion was about 19-fold higher, at 44.9, compared with the risk observed during moderate to vigorous exertion in the Nurses' Health Study cohort (RR, 2.38).

"Part of this difference could be due to the inclusion of moderate exertion in our exercise measure," Dr. Whang and colleagues wrote. They noted, however, that a similar gender difference was found in previous, smaller studies. ■

Phobic Anxiety Ups Mortality in Coronary Artery Disease Patients

BY HEIDI SPLETE

Senior Writer

DENVER — Phobic anxiety was significantly associated with both ventricular arrhythmia and mortality in coronary artery disease patients during a median 3-year follow-up, Lana Watkins, Ph.D., said at the annual meeting of the American Psychosomatic Society.

The relationship between sudden cardiac death and phobic anxiety in particular has not been well studied, Dr. Watkins noted. She and her colleagues at Duke University Medical Center in Durham, N.C., evaluated 941 adult patients who were being treated for coronary artery disease. A majority of these patients were white males. About a third of the patients did not have high school diplomas, and smoking and obesity were common among patients in the study.

The highest number of arrhythmias occurred among those with the highest levels of phobic anxiety based on the Crown-Crisp index, which rates eight types of phobias, including fear of heights, crowds, and closed spaces.

Overall, the highest tertile of phobic anxiety scores had twice as many females as males, and a higher level of phobic anxiety was significantly associated with female sex, minority status, increased body mass index, and younger age.

Despite the finding of an association between phobic anxiety and ventricular arrhythmias, no significant relationship was found between phobic anxiety and sudden cardiac death, Dr. Watkins noted.

During a follow-up period, 134 patients died, and 46 of these met the criteria for sudden cardiac death. Sudden cardiac death was defined as death within 72 hours of collapse, in order to account for deaths of patients who lived alone. However, mortality was highest among patients with high levels of phobic anxiety, he said.

The predictability of phobic anxiety for both mortality and an increased risk of ventricular arrhythmias was maintained in a regression analysis after adjustment for other predictors of mortality, including age, gender, education level, and comorbidities. ■