ICDs Have Little Impact on Sudden Death Rates

BY BRUCE JANCIN
Denver Bureau

SNOWMASS, COLO. — Implantable cardioverter-defibrillator therapy has failed to make an appreciable dent in the enormous public health problem of sudden cardiac death, the leading cause of mortality in the United States.

"The data are actually somewhat disappointing," Dr. Michael R. Gold said at a conference sponsored by the Society for Cardiovascular Angiography and Interventions.

Preliminary 2007 national data indicate that although the total number of cardiovascular deaths continues to decline, the proportion of cardiovascular mortality due to sudden death has climbed to 70%.

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>
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pact on the total number of sudden deaths. They appear to be, if anything, increasing, despite all the things that we're doing. ICDs were supposed to be the cure for this problem," noted Dr. Gold, professor of medicine and director of adult cardiology at the Medical University of South Carolina, Charleston.

The problem with using ICDs for primary prevention of sudden cardiac death (SCD) is that these expensive devices are being placed in the wrong people.

"Right now we're stuck: 70%-80% of SCDs occur in people who do not meet standard indications for an ICD, and of those who do get ICDs, about 70% aren't going to use them in the first 4 or 5 years," the cardiologist said at the conference, cosponsored by the American College of Cardiology.

Even in those who do get an appropriate ICD shock, it doesn't mean what it used to. "It used to be we'd pat the patient on the back and say, 'Congratulations, you just had your life saved. Go on about your business.' In fact, that's not true anymore. If you have a shock, particularly for ventricular fibrillation, it's almost a death sentence. You're being told that you've had an appropriate shock, it successfully got you out of that rhythm, but now you have roughly a 10-fold increased mortality risk over the next couple of years. They're not dying of sudden death, they're dying of nonsudden cardiac death: ischemic events and heart failure events," he said.

As for the use of ICDs for secondary prevention of cardiac arrest, that's unlikely to have a major public health impact.

"If we gave an ICD to every person in the U.S. who's had a cardiac arrest, we would save about 500 lives per year. That's about 0.1% of the SCDs," said Dr. Gold.

The difficulty in using ICDs for secondary prevention, he noted, is that so few individuals survive a first out-of-hospital cardiac arrest. In Chicago, New York, and Boston, the rate hovers around 1%.

The basis of the strategy of ICDs for primary prevention is what Dr. Gold calls the rule of 80s: the concept that 80% of SCDs are brought on by ventricular tachycardia degenerating into ventricular fibrillation, 80% occur in men, 80% have coronary artery disease with prior MI, and 80% are associated with heart failure with left ventricular systolic dysfunction. That was true 20 years ago, but it's no longer the case today because of the remarkable advances in the treatment of acute MI.

For example, a recent analysis of 714 consecutive SCDs in the population-based Oregon Sudden Unexplained Death Study showed only one in six subjects had undergone assessment of left ventricular ejection fraction (EF). In other words, there was no prior suspicion of cardiac disease in 83% of patients with SCD. Moreover, 70% of those with an EF measurement had a value greater than 35%, so they didn't meet current criteria for prophylactic ICD placement (J. Am. Coll. Cardiol. 2006;47:1161-6).

Roughly half of Oregon SCDs with a known EF had a normal value. Only 53% in that subgroup were men, and only 50% with a normal EF had a known CAD. So much for the rule of 80s. Similarly, a history of heart failure was present in only 12%—not the traditional 80%—of 492 consecutive patients with out-of-hospital SCD in the Maastricht, Netherlands, area (Eur. Heart J. 2003;24:1204-9). ∎