Arrhythmias Up Risks in Congenital Heart Disease

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CHICAGO — Adults with congenital heart disease who develop atrial fibrillation or another atrial arrhythmia have more than twice the subsequent mortality and triple the hospitalization rate of those without atrial arrhythmias, Dr. Ariane J. Marelli said at the annual meeting of the American College of Cardiology.

With increasing numbers of congenital heart disease patients today surviving decades longer than was typical in the past, health care systems will need to be ready to deal with a growing burden of atrial arrhythmia–related disease, including stroke, heart failure, and need for hospital-based interventions, added Dr. Marelli of McGill University, Montreal.

She presented a population-based study of all 38,430 adult congenital heart disease (ACHD) patients in a Quebec-wide administrative registry during 1983-2005. After a 5-year washout period designed to exclude patients with atrial arrhythmias secondary to pulmonary hypertension or heart failure, all patients free of atrial arrhythmias at the start of 1988 were followed through 2005.

In 2005, the prevalence of atrial arrhythmia was 15% in the overall group. However, in those with transposition of the great arteries, univentricular heart, or Ebstein anomaly the prevalence of atrial arrhythmia was 25%-30%.

In contrast, the rate was 20% in patients with atrial septal defects, 15% in those with tetralogy of Fallot, and less than 10% in patients with other forms of ACHD.

Among patients with severe ACHD—that is, those with univentricular heart, atrioventricular canal defects, tetralogy of Fallot, truncus arteriosus, or transposition of the great arteries—the lifetime risk of atrial arrhythmia was 60%. It was 43% in those with other forms of ACHD.

A 20-year-old Quebec ACHD patient without atrial arrhythmia at baseline had a 7% risk of developing such an arrhythmia during the next 20 years. That's comparable with the 20-year risk in a 55-year-old without congenital heart disease, which has been reported at 7%-10% in various studies.

There was a 2.1-fold increased mortality risk and 3.2-fold greater hospitalization risk among patients with ACHD in the atrial arrhythmia group.

"Tim Garson [a pediatric cardiologist who is executive vice president and provost at the University of Virginia, Charlottesville] used to say, 'We have young patients with old hearts.' I think this is an illustration of that fact," Dr. Marelli observed.

A 55-year-old ACHD patient in the Quebec study had a 20-year risk of atrial arrhythmia of 38%.

Dr. Marelli and her coinvestigators matched 12,768 ACHD patients with atrial arrhythmias by age, gender, calendar time, and disease severity to an equal number of ACHD controls free of atrial arrhythmia.

The crude mortality rate was 55/1,000 in the atrial arrhythmia group compared with 9/1,000 among controls. The crude hospitalization rate was 5.1 days/1,000 person-days in ACHD patients with atrial arrhythmia versus 0.8 days/1,000 person-days in ACHD controls.

After adjustment for potential confounders, this translated into a 2.1-fold increased mortality risk and 3.2-fold greater hospitalization risk in the atrial arrhythmia group.

Audience members noted that until now, ventricular arrhythmias in ACHD have gotten the vast majority of the research attention.

They expressed gratitude to the Montreal group for conducting the most thorough study to date on the impact of atrial arrhythmias in ACHD patients. They were particularly eager to learn whether Dr. Marelli and her coworkers have come up with a way to risk-stratify ACHD patients with atrial arrhythmias to guide anticoagulation and other preventive therapies.

Dr. Marelli replied that she, too, sees this as a pressing need. She and her colleagues had tried applying the widely used CHADS-2 risk scoring system but they had found it just doesn't work in an ACHD population. ■