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U.S. and Europe Differ on Testing Athletes for Rare Heart Ailment

By JERE LONGMAN

No one wants to see an athlete die on the playing field, but European and American medical officials differ on how to routinely screen for the heart muscle disease that is the leading cause of sudden cardiac death among those who play sports in high school and college.

A push for more sophisticated routine cardiovascular screening has gained particular urgency in Europe, after studies in Italy and the sudden cardiac deaths of a handful of elite professional athletes in the past decade.

Since last December, the International Olympic Committee, based in Switzerland, and the European Society of Cardiology have recommended that athletes under 35 be screened with an electrocardiogram before they can participate in sports.

These recommendations have been embraced by voluntary screening programs organized by some American doctors and by parents whose children or other relatives have died of hypertrophic cardiomyopathy, or HCM, an abnormal thickening of the heart muscle.

Although mortality rates are not known with certainty, as many as 200 to 300 high school and college athletes may die of sudden cardiac death each year in the United States, with a third caused by HCM, said Dr. Barry J. Maron, a Minneapolis cardiologist and leading authority on the heart condition.

Yet, Maron and others in the American medical establishment believe that routine use of electrocardiograms and echocardiograms would be unworkable as a national plan. Instead, they recommend improvement of the screening procedures in place.

In the United States, the screening of high school and college athletes before they participate in a sport generally follows guidelines issued in 1996 by the American Heart Association. The guidelines call for physical examinations and the compiling of careful family and personal histories.

The European guidelines prompted several concerns in the United States: that deaths are too rare to warrant more comprehensive routine cardiovascular screening; that inexact tests could result in false positives in up to 20 percent of screenings; that such a program would lack cost effectiveness; and that it would be immensely difficult to marshal the staffing, equipment and money to screen 12 million to 15 million competitive athletes in this country.

The routine use of echocardiograms and electrocardiograms is not common in screening young American athletes who have no family history of sudden death and show no symptoms of HCM like chest pains, heart palpitations, lightheadedness, fainting, shortness of breath and excessive fatigue during exercise. Nor is such a system likely to be put in effect here, said Maron, who is director of the Hypertrophic Cardiomyopathy Center at the Minneapolis Heart Institute Foundation.

In a February editorial in *The European Heart Journal*, Maron called the European recommendations laudable and superior to the American screening system, but wrote, "There are simply too many competing health care priorities and special interests and anticipated difficulties in cost control, as well as heightened concerns for medical-legal liability, to warrant serious consideration for such an undertaking."

More efficient identification of young American athletes with hypertrophic cardiomyopathy, Maron and other experts said, could be achieved by gathering more reliable statistical information and by developing standardized methods of screening. According to the American Heart Association, 11 states do not have a standard medical form for questioning athletes, five do not even require them to be examined and 10 allow chiropractors to screen them.

"We should have a better way of figuring all this out, so we can make more informed decisions," said Dr. Paul D. Thompson, director of the Athletes' Heart Program at Hartford Hospital.

Among Thompson's recommendations for each athlete are screening by a family physician; using electrocardiograms and echocardiograms for more extensive follow-up testing for those who show symptoms of HCM; requiring coaches to be trained in CPR; and using automatic external defibrillators as their cost becomes less prohibitive.

Hypertrophic cardiomyopathy, largely inherited, is estimated to affect 1 in 500 people in the general population. Death is uncommon, but most athletic fatalities occur during training and competition. For many athletes, death is the first time they exhibit signs of HCM, which can trigger a vulnerable, diseased heart into a fatal disruption of its rhythmic beating.

Last December, the International Olympic Committee recommended that athletes under 35 receive screening by an electrocardiogram, which measures electrical activity of the heart, every two years beginning at age 12 or 14.

This followed the much-publicized sudden cardiac death of the two-time Olympic pairs skating champion Sergei Grinkov during training for an ice show in 1995, and, more recently, the deaths of several international hockey and soccer stars, including the Cameroonian midfielder Marc-Vivien Foe, who collapsed and died during a match in France in 2003.

"To see a young competitor dying on the field of play is something that is unacceptable," Dr. Patrick Schamasch, medical director of the Olympic committee, said in a telephone interview from Paris. "We have to try to do everything in our power to try to prevent that."

The European Society of Cardiology made a similar recommendation in February in *The European Heart Journal*, saying it believed that sudden cardiac deaths could potentially be reduced by 50 percent to 70 percent. The European group was influenced by Italian policy, which mandates that every young athlete receive an electrocardiogram in addition to a physical exam and screening of family history. Italy has systematically screened young athletes for 25 years.

A study in the Veneto region of Italy indicated that the risk of dying of sudden cardiac death among young athletes was two and a half times that of nonathletes. Dr. Domenico Corrado, an Italian cardiologist affiliated with the University of Padua Medical School, said he believed electrocardiograms could screen as sensitively as echocardiograms, an ultrasound imaging of the heart, while producing a false-positive rate of 10 percent.

"I think the growing evidence that screening saves lives will be determined in the future," Corrado said from Italy.

Because electrocardiograms and echocardiograms are not perfect, there is concern among doctors in the United States that routine screening with these diagnostic tools may cause more problems than it solves. Doctors said it can be difficult to distinguish between abnormal hearts and the normal thickening of the heart that occurs in healthy competitive athletes. False positives can lead to needless anxiety, the barring from competition of athletes who should not be restricted and follow-up tests that can be expensive, more invasive and risky.

"Who's going to pay for it?" asked Matt Mitten, chairman of the National Collegiate Athletic Association's competitive safeguards committee.

Echocardiograms, the preferred diagnostic tool, can cost \$600 or more, doctors said, and routine screening is not covered by many private insurance plans, which could shift the burden to high schools and colleges with tight budgets.

One possible solution to screening for hypertrophic cardiomyopathy, once prices become more affordable, is a gene test, said Dr. Christine E. Seidman, director of the Cardiovascular Genetics Center at Brigham and Women's Hospital in Boston. The disease is caused by a mutation of any 1 of 10 genes that leaves the heart muscle cells in disorganized alignment.

"There's got to be another way to screen for this condition; we just have to figure out what the other method is," said Dr. Peter J. Carek, an associate professor of family medicine at the Medical University of South Carolina in Charleston. "My concern is, we not only want to help people who need to be screened, but we don't want to potentially harm people who don't need to be restricted."

As a starting point, Dr. Tracey R. Hoke, a pediatric cardiologist with the National Institutes of Health, said the European recommendations should at least be considered. "We really are at a crossroads as far as guidelines are concerned," she said.

Dr. George Rodgers, a cardiologist in Austin, Tex., who has volunteered his time for seven years to screen high school and University of Texas athletes with echocardiograms, said he thought the European guidelines could be adapted without "breaking the bank" of the health care system.

Limited echocardiograms could be performed for about \$5 a screening, he said, using available equipment and with doctors volunteering their

time, as they always have for team sports physicals. Rodgers, who is president of the Austin Heart Foundation, said he had screened about 3,000 athletes and discovered six cases of hypertrophic cardiomyopathy, which matches the 1 in 500 ratio found in the general public.

Mandated echocardiogram or electrocardiogram screening would also allow doctors to reach more minority athletes, who appear to have a higher prevalence of HCM, Rodgers said. If the tests are not perfect, he said, "It's still a heck of a lot better than a noisy gym, listening for a heart murmur with a stethoscope."

Sharon Bates of Phoenix has also become a proponent of routine screening with echocardiograms and electrocardiograms in the five years since her son, Anthony, died of HCM after a weight-lifting workout at Kansas State University, where he was a defensive lineman.

Many athletes do not know their family medical histories, and a number of them may be reluctant to admit symptoms like fainting or palpitations out of fear that they will not be allowed to play, she said.

A foundation created in her son's name has organized screenings for 2,200 high school athletes in several states, using equipment donated by hospitals, medical suppliers, firefighters and paramedics, Bates said.

"Resistance comes from looking at the big picture and saying, 'We can't do it all,' " Bates said. "But if you break it down into bite sizes, into communities, it can be done for pennies on the dollar."

The important thing is to keep an open mind as new research becomes available, Thompson of Hartford Hospital said. While he does not advocate the routine use of electrocardiograms and echocardiograms, he said, "I don't want to come off as absolutely certain that I know what's going on. Every time there's a tragedy, it makes you rethink."