Arrhythmogenic Right Ventricular Cardiomyopathy and Sudden Cardiac Death in Young Koreans

To the Editor:

I read with great interest the recently published study by Cho et al1 in which they report 38 sudden cardiac deaths (SCD) (arrhythmogenic right ventricular cardiomyopathy, ARVC, in 42%) in young subjects from Taegu-Kyungpook during a 2-year period. Interestingly, the percentage of cases of ARVC is higher than in previously published reports.

Maron et al reported that of 134 athletes (screening results for approximately 10 years) who died of a variety of cardiovascular causes, 48 (36%) had probable or definite evidence of hypertrophic cardiomyopathy (HCM): The most common single disease entity was HCM, a disease known to be associated with a risk for sudden death in young subjects. Only 4 athletes (3%) had findings diagnostic of ARVC, with extensive fibrofatty replacement of myocytes in the right ventricular wall. I think that the proportion of ARVC in the cases of SCD may decrease when Cho et al collect more cases.

However, detection of a group with increased risk remains a major problem! If SCD can occur in apparently healthy subjects, does everyone, whether or not they participate in a sport activity, face this risk? Three pre-participation screening methods have been recommended: specific cardiovascular history and physical examination, 12-lead ECG, and 2-dimensional echocardiography.

Although Cho et al also reported that SCD was not related to vigorous physical or competitive activity! Corrado et al noted that sport activity in adolescents was associated with an increased risk of SCD, as a trigger factor! The proposed primary mechanism of sudden death in athletes involves the development of a fatal arrhythmia, presumably ventricular fibrillation or asystole! There is a lack of knowledge about the myocardial repolarization changes during exercise in athletes; however, we found that QT dispersion values during exercise (QTd ex) were significantly lower in athletes than in controls! The reduced QTd ex reflects homogeneous myocardial repolarization and may help to explain the reduced mortality rate in regularly exercising subjects. We consider that measurement of QTd ex could provide a simple and inexpensive screening method for athletes.

Early detection of cardiac risk in athletes is a difficult and important problem that needs to be solved. Recently, an easily measured tissue Doppler index was proposed as a potentially useful method for differentiating physiological variants from structural heart disease, but I think it would need to be routinely used for differentiating physiological hypertrophy from the pathologic.

Which method is the best for screening subjects for risk of SCD? As yet, there is not a gold standard method for screening, although the subject’s history and a physical examination are still primary methods that are easy, cheap, and non-invasive, but will fail to identify high risk pathologies.

References


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Author’s Reply
Arrhythmogenic Right Ventricular Cardiomyopathy as a Cause of Sudden Death

We would like to thank Dr Kasikcioglu for his thorough comments on our study! Arrhythmogenic right ventricular cardiomyopathy (ARVC) is considered an important cause of sudden death during sport! but as we reported, in our study most of the cases of sudden death because of ARVC were not related to sport or other vigorous physical activity. Our data from victims of sudden death from ARVC aged more than 35 years also showed similar results (unpublished data). Most were found dead in bed or died suddenly during non-vigorous physical activity such as eating, light gardening, and usual office work. Unfortunately, we do not have a clear explanation of these quite unusual findings, compared with the reports from Padua, Italy! One possible explanation is selection bias from our public prosecutor, as mentioned in our study! We do think that most cases of sudden death from ARVC occur during non-strenuous physical activity or sleeping, at least in this part of Korea. Another important finding is that most of the victims had never suffered from syncope or palpitation prior to their death. Most of our living patients with ARVC who meet the Task Force Criteria of ARVC3 also show only minimal abnormalities on physical examination, chest X-ray and routine ECG when they are in sinus rhythm.

Sudden death, especially in the young, is a great loss not only to the family but also to society. Better methods to detect patients at risk of sudden death will help prevent this kind of tragedy.

References

2. Corrado D, Thiene G, Nava A, Rossi L, Pennelli N. Sudden death in...


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