Sudden cardiac death (SCD) is both a major clinical condition and a public problem claiming >3.7 million lives worldwide each year (1). The causes and prevalence of SCD are dependent on age, sex, ethnicity, and genetics (2). Although there is a wealth of data on SCD from Western countries, data from Asia and China are relatively scarce. Thus, there has been controversy on the potentially lower prevalence of and propensity for SCD in Asians. On the basis of U.S. Vital Statistics data in 1998, the SCD death rates (per 100,000) were 503, 407, 259, and 213 for the black, white, American Indian/Alaskan native, and Asian/Pacific Islander populations, respectively (3). In addition, in the State of Hawaii, Asian ancestry groups had a much lower cardiovascular mortality than Hawaiians and Caucasians (4). This controversy, together with the socioeconomics of Asian countries, has resulted in a wide gap in adopting implantable cardioverter-defibrillator (ICD) therapy for SCD prevention compared with Western countries. In 2009, the ICD implantation rate in the United States was 434 per million people (5). Although there has been a rising trend of ICD implantation rates in Asia, the numbers still lagged behind and varied from 0.4 in the Philippines, 1.4 in China to 50 in Japan, and 54.3 in Singapore per million people in 2013 (6). The prevalence of SCD in different Asian countries and the specific conditions of ischemic cardiomyopathy, hypertrophic cardiomyopathy (HCM), and Brugada syndrome will be discussed in more detail.

PREVALENCE OF SCD IN ASIA AND CHINA

A prospective study on SCD incidence was performed in 4 regions with different socioeconomic status in 2005 to 2006 in China (7). A total of 678,718 inhabitants were monitored for 1 year, and 284 SCDs occurred. The overall incidence of SCD was 41.8 per 100,000 people. A retrospective study on the incidence of SCD was performed in Japan by reviewing the death certificates, hospital records, forensic medical records, and police records of the residents of the southern part of Okinawa island (8). A total of 126 residents died suddenly during a 3-year period from 1992 to 1994, giving a crude incidence rate of 37 per 100,000/year. In Hong Kong, a retrospective review of the coroners’ reports revealed a very low incidence rate of 1.8 sudden deaths per 100,000 people in 1997 (9). Compared with the data from United States, the incidence of SCD in Asians appears to be lower. In a retrospective analysis of death certificates from the National Mortality Followback Survey, 18,733 deaths were included in the study (10). An incidence of 176 and 85 per 100,000 people for SCD was observed for men and women, respectively. In a prospective evaluation among 660,486 residents of Multnomah County, Oregon, using multiple sources of surveillance, an SCD incidence rate of 53 per 100,000 people was observed (11).

SCD IN ISCHEMIC CARDIOMYOPATHY

Ischemic cardiomyopathy with poor left ventricular ejection fraction (LVEF) is an important cause of SCD (12). However, whether Asians with this condition have a lower propensity for SCD compared with their Western counterparts remains controversial. In a retrospective study of 3,258 Japanese patients who underwent elective cardiac catheterization, 90 patients met the MADIT II (Multicenter Automatic Defibrillator Implantation Trial) criteria (13) with a history of Q-wave myocardial infarction over 40 days, LVEF ≤30%, and age >21 years, but did not undergo...
ICD implantation (14). The survival rate of these 90 patients was comparable to the MADIT II defibrillator group but higher than the MADIT II conventional therapy group. These observations suggest a lower propensity of Japanese patients for SCD. On the contrary, another retrospective study of 617 Chinese patients from Hong Kong who were referred for cardiac rehabilitation showed the opposite results (15). A total of 70 patients met the MADIT II criteria but did not undergo ICD implantation. The survival rate of these 70 patients was comparable to the MADIT II conventional therapy group but lower than the MADIT II defibrillator group. Potential explanations for the discrepancy of results include a higher proportion of patients with New York Heart Association functional class I status and coronary revascularization in the Japanese study.

Socioeconomic status of many Asian countries limits the application of ICD therapy for primary prevention of SCD in ischemic cardiomyopathy. Further risk stratification may be appropriate to improve the cost-effectiveness of ICD therapy. In a prospective observational study, 1,018 Chinese patients who had LVEF ≤35%, New York Heart Association functional class II or III status, and >40 days after myocardial infarction did not undergo ICD implantation for various reasons (16). During a mean follow-up of 2.8 years, all-cause mortality was 7.4% and SCD was 5%. Independent predictors of SCD included older age, LVEF ≤25%, and absence of coronary revascularization.

SCD IN HCM

The prevalence of HCM in China was 0.16%, which was comparable to the Western data, according to a population-based echocardiographic study on 8,080 Chinese adults (17). In another long-term follow-up study in Chinese patients from Hong Kong, a high incidence of AF (35%) and nonobstructive apical hypertrophy (41%) were observed (18). However, a low annual mortality rate of 1.6% was observed, compared with 5.6% in non-Asians (19). The lower mortality rate in Chinese patients may be due to a difference in disease-causing mutations. The common malignant mutation of R403Q in MYH7 identified in Caucasian patients was not detected in a study involving 34 Chinese patients with HCM (20).

SCD IN BRUGADA SYNDROME

The prevalence of Brugada syndrome is likely to be higher in Southeast Asia than in Europe and the United States. The prevalence rate was estimated to be 0.02% to 0.1% in Europe and 0.1% to 0.25% in Asia (5). Despite a difference in prevalence, the event rates in Asian patients appear to be similar to those of Westerners.

ARE ASIANS DIFFERENT FROM WESTERNERS IN THE PREVALENCE OF AND PROPENSITY FOR SCD?

A true comparison between different ethnicities in the prevalence of SCD has been limited by the difference in study methodologies, prevalence of cardiovascular risk factors, and underlying conditions. Despite the scarcity of data from Asian countries, prevalence of SCD appears to be lower than that of the Western counterparts. Although a difference in genetic mutation profile in Asians has been observed in some underlying conditions causing SCD, a difference in the propensity for SCD remains controversial. Further research in this area is eagerly and urgently awaited to guide more appropriate clinical decisions.

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