Epidemiology and Etiology of Sudden Cardiac Death: Is there an inter-racial difference?

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Prophylactic management of sudden cardiac death has been a challenge in the clinical practice. In the US, a large number of clinical randomized trials evaluating the efficacy of implantable cardioverter defibrillators (ICDs) regarding the mortality particularly that associated with arrhythmic events, have been completed and have demonstrated that ICDs have a great potential to improve the prognosis of high risk patients with SCD, and are superior to antiarrhythmic drug therapy. At the same time, the indications (of the ACC/AHA/NASPE guidelines) and national coverage (on the statement of CMS) of ICDs for primary prevention have become extended by sequentially adding the inclusion criteria from those randomized trials. As a result, the total number of ICD implants is estimated to increase to more than 150,000/year, in 2005. On the contrary, we do not have any reliable evidence in Japan with regard to the role of ICDs in either secondary or primary prevention of SCD. Accordingly, the medical care in this area (prophylaxis of SCD) is remarkably delayed, as compared to that in western countries. The number of ICD implants clearly reflects this delay, i.e., approximately only 2,600 ICD implantations are expected in Japan this year. However, at the present time, it is recommended that we avoid an easy application of the US criteria to our clinical practice because of several reasons; of which, the most important issue is that inter-racial differences are presumed to be present in terms of the distribution of structural heart disease, content of the medical care and even the incidence of SCD.

Watanabe et al. demonstrated in their article published in the current issue of the Journal of Arrhythmia that the incidence of out-of-hospital cardiac arrests (OHCA) was 62.3/100,000/year. In approximately a half of those (47%), the OHCA was due to a cardiac etiology. Moreover, the incidence of a bystander witnessed ventricular fibrillation (VF) was 2.5/100,000/year. These results are almost consistent with a previous study from Osaka city, which similarly made a population-based evaluation using the Utstein style analysis. According to those reports, the total incidence of SCDs is anticipated to be roughly 30,000–35,000/year, suggesting the incidence of SCDs/population is about one third that of the US.

Another significant observation from this study was that not only age and gender, but also the collapse to the ECG time was associated with the appearance of VF. Since the appearance of VF and bystander CPR were related significantly to a better prognosis for the patients, this data may provide important information for constructing future strategies for emergency medicine.

It is also an interesting finding that younger patients are more likely to have VF episodes during the nighttime than are older patients. Although the authors do not have any direct evidence except for the fact that a few patients actually had later disorders, it seems reasonable to speculate that an acute coronary syndrome or Brugada syndrome were two possible causes for the nighttime SCD in the younger population. An age-related difference in the circadian variation of SCD has been previously shown in Europe in which the younger population had a biphasic distribution with peaks in the morning and afternoon, whereas the older population demonstrated a monophasic distribution with a peak only in the morning that may have reflected an age-related
variability in the etiology. It is conceivable that there might be inter-racial differences in the circadian variation, and thus also in the distribution of the etiology of SCD in the younger population. However further studies with a large population are needed to draw this conclusion.

References