

### **Survey of School Students indicated of Implantable Cardioverter-Defibrillators**

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**Objectives:** With the spread of public access defibrillation and the advance of management for life-threatening arrhythmia, reports of survivors from cardiopulmonary arrest in school students are increasing. As some survivors among them are supposed to be indicated implantable cardioverter-defibrillator (ICD), those demographical data were surveyed.

**Methods:** Cases were searched and picked up with the keywords of ICD, AED, defibrillation, or ventricular fibrillation from all injury or illness reported to the mutual aid insurance system under school supervision in Japan from 2007 to 2012. Their school grade, sex, and original disease that have possibility of ventricular fibrillation, are summarized.

**Results:** Twenty-four cases were reported that ICD was implanted after resuscitation. One case occurred in 2007, 3 each in 2008 and in 2009, 8 in 2010, 6 in 2011, and 3 in 2012. The youngest case was in the 1st grade in middle school, 2 cases in the 2nd of middle school, 3 in the 3rd of middle school, 5 in the 1st of high school, 8 in the 2nd of high school, and 5 in the 3rd of high school. High school students occupied 75%. Twenty-one cases (87.5%) were male students. Basic diseases diagnosed before event occurrence were 7 hypertrophic cardiomyopathies (HCM), 1 operated congenital heart disease. Other 16 cases were not diagnosed before event and detail examinations for them revealed 1 case each of HCM, dilated cardiomyopathy, Brugada syndrome, long QT syndrome, ventricular tachycardia, vasospastic angina, and 10 cases were assumed to be idiopathic ventricular fibrillation (IVF). All events except one were occurred during or immediately after hard exercise. Exceptional case occurred during playing saxophone. Eighteen cases fell while running, 2 while basketball game, 2 while swimming, and 1 in kendo (Japanese swordsmanship). Schoolteacher or bystander equipped and operated automated electrical defibrillator (AED) in all cases except one case of operated congenital heart disease.

**Conclusions:** Number of patients who received ICD implantation is increasing in school, especially for patients with HCM and IVF. Pediatric cardiologists and caregivers are requested to have knowledge to take care of ICD implanted students.