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**“Prognostic significance of premature ventricular contractions without obvious heart diseases determined by standard 12-lead electrocardiography considering their morphology”**

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**Study Findings**

Premature ventricular contraction (PVC) (a type of arrhythmia characterized by premature heart contractions originating in one of the ventricles) in patients with no overt underlying heart disease did not increase the risk of all-cause death, death from heart disease, or death from ischemic heart disease (angina pectoris and myocardial infarction). Analysis by underlying morphology, however, showed the possibility that PVC with left bundle branch block morphology (which has impulses arising in the right ventricle and resembles a left bundle branch conduction abnormality) increased the risk of death from ischemic heart disease.

**Explanation**

PVC—a common arrhythmia triggered by impulses arising outside the normal conduction pathway of the heart—occurs even in people with no underlying heart disease (pre-existing heart condition, including angina pectoris, valve disease, or myocardial disease). No consensus has been reached on the prognosis (mortality) of PVC with no underlying heart disease, and the effects of disease morphology on outcome are not well characterized. We evaluated the outcomes of PVC in Adult Health Study participants, analyzing the data according to disease morphology.

**1. Objectives**

This study was designed to evaluate the outcomes of PVC in Adult Health Study participants according to disease morphology and to review the association between PVC prevalence and radiation dose.

**2. Methods**

First, all 6685 Hiroshima and Nagasaki atomic-bomb survivors who were examined during the two-year base period from January 1990 to December 1991 (period of case entry) were selected as candidates for analysis. Next, the 1000 participants with an overt underlying heart disease or EKG abnormality noted in the examination were excluded for an analysis population of 5685 participants, 67.1% of whom were women. One hundred thirty-one participants with PVC reported in 12-lead EKG performed at the examination were then identified. These participants with PVC were classified according to EKG morphology: left bundle branch block (74), right bundle branch block (21), and other (36). They were followed through December 2008 for the endpoints of all-cause death, cardiac death, and death from ischemic heart disease. Cause of death was based on information obtained from death certificates. The data were tested with the multivariate Cox proportional hazards model to calculate the risk (hazard ratio) of the endpoints.

**3. Results**

No PVC morphology (overall, left bundle branch block, right bundle branch block, other) was associated with increased all-cause death or cardiac death. Participants with PVC of left bundle branch block morphology, however, were at significantly higher risk of death from ischemic heart disease (hazard ratio, 2.73; 95% confidence interval, 1.11–6.73). Our analyses

revealed no significant correlation between radiation dose and the incidence of PVC in the examination period.

The study data suggest that PVC with no overt underlying heart disease could be a risk factor for death from ischemic heart disease. Morphological classification of PVC may therefore inform risk evaluations for ischemic heart disease performed in health examinations.

**The Radiation Effects Research Foundation** has studied A-bomb survivors and their offspring in Hiroshima and Nagasaki for more than 60 years. RERF's research achievements are considered the principal scientific basis for radiation risk assessment by the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) and for recommendations regarding radiation protection standards by the International Commission on Radiological Protection (ICRP). RERF expresses its profound gratitude to the A-bomb survivors and survivors' offspring for their cooperation in our studies.

§ *Annals of Noninvasive Electrocardiology* is an online journal that focuses on the clinical application of traditional and new ECG-based techniques in the diagnosis and treatment of cardiac patients. The journal publishes peer-reviewed articles of interest to clinicians and researchers in the field of noninvasive electrocardiology. (Impact factor in 2014: 1.44)