Risk of Cardiovascular Disease After Earthquake Disaster

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Earthquake disasters more frequently occur in Japan than in other countries of the world, and small earthquakes as well as large ones have occurred in various parts of Japan since the dawn of history. The Great Hanshin-Awaji Earthquake, Niigata Chuetsu Earthquake, Great East Japan Earthquake (GEJE), Kumamoto Earthquake and so on have caused serious damages in the past few decades, and there is a danger that the Nankai Trough Earthquake or Capital Tokyo Inland Earthquake may occur in the future. In an earthquake disaster, deaths caused by extrinsic factors such as crushing deaths may be inevitable, but it is possible that we can avoid secondary health damage such as acute cerebral and cardiovascular diseases (CVD), venous thromboembolism and serious infectious disease.

Previous reports show that there is a transient and sharp increase in the occurrence of sudden death of cardiac cause after an earthquake disaster. The incidence rate of acute myocardial infarction was higher for the earthquake in the early morning (1994 Northridge earthquakes, at 4:31 AM) than for the earthquake in the afternoon (1989 Loma Prieta earthquake, at 5:04 PM). This finding suggests that emotional stress superimposed on the stress of awakening, or the time of occurrence of the earthquake, may affect triggering of acute myocardial infarction, although needless to say that many factors such as the magnitude, frequency of earthquakes, aftershocks, climate, and distance from the hypocenter or epicenter may have an effect on the incidence of CVD.

As shown in the Figure, physical and mental stress, increased sympathetic nerve activity, high blood pressure...
because of salt excess or changes in diet, enhanced blood coagulation because of dehydration or hesitation about water intake and so on lead to an increased risk of CVD in the life of the evacuees and/or the uncommon home life without daily necessities or services after the earthquake.8–10

In this issue of the Journal, Sado et al11 report that an increased risk of out-of-hospital cardiac arrest (OHCA) with cardiac origin was found in the 1st year after the GEJE, but that the enhanced risk had disappeared in the 2nd and 3rd years after the earthquake in their analysis of the all-Japan Utstein registry data. Moreover, the elderly population (≥75 years old) had a significantly increased risk of OHCA with cardiac origin in the 1st year after GEJE. It is very significant that the subjects of this study were the entire population of the disaster areas obtained from the Utstein registry data. Kitamura et al have reported many studies on OHCA using the Utstein registry data,4,12,13 which are obtained from the record of patients transported to medical institutions by emergency medical service personnel of the Fire and Disaster Management Agency. The data are reliable, so analysis and reporting on the state of OHCA using Utstein registry data will be required more and more in other disasters or conditions. It is expected that Sado et al and Kitamura et al will continue their analyses using the all-Japan Utstein registry data in various situations.

Finding that the enhanced risk of CVD and OHCA of cardiac origin does not continue in the 2nd year and 3rd year after an earthquake disaster does not always mean there is no necessity for preventive medical support in the chronic phase. For example, regarding the increased incidence of acute myocardial infarction after an earthquake disaster, coronary plaque rupture may occur simultaneously with the earthquake and some disaster victims will die in the early phase of the disaster, but that is followed by a decrease in events that overcompensates for the excess of death.14 That is a reasonable assumption, but the reduced risk of CVD, including OHCA of cardiac origin, in the chronic phase may be related to the effectiveness of countermeasures for CVD after an earthquake disaster. In short, there is a possibility that medical support from the public administration or private teams contributed to the risk reduction in the 2nd and 3rd years after the GEJE.

Finally, it is hoped that clarification of the data on CVD risk after earthquake disaster will be helpful when considering the management of the medical or health support by administrative agencies and public or private teams.

Disclosure

None.

References