

Postmortem examination and personal identification of victims of the Great East Japan Earthquake

Learning objective and outcome. This presentation will provide an outline of the forensic investigation of victims of the Great Eastern Japan Earthquake Disaster, carried out with the assistance of members of the Japanese Society of Legal Medicine (JSLM).

Impact statement. The presentation will impact the forensic science community by providing foundational knowledge on the features of the Japanese medico-legal system and mass disaster management, and highlighting the role of forensic personnel in the response to overwhelming natural disasters.

A massive earthquake of magnitude 9.0 struck eastern Japan at 2:46 pm on March 11, 2011. The epicenter was around 130 km off the Pacific coast of northeast Japan. Strong tremors were observed across a wide area. However, both human casualties and property damage were concentrated on 3 prefectures, Iwate, Miyagi and Fukushima, located along the Pacific coast of the northeast part of the main island of Japan (Honshu). This was mostly due to the huge tsunami triggered by the earthquake, over 15 m in amplitude and 40 m in run-up height, which engulfed the coastal areas of those prefectures.

Faced with the devastation, the JSLM established the *ad hoc* Disaster Response Headquarters on March 12 and dispatched member pathologists, physicians and dentists to the 3 prefectures in cooperation with the National Police Agency. This was the first time such a headquarters had been set up since the society issued a guideline in 1997 for an integrated support system of mass disaster management based on the experience of the 1995 great Hanshin-Awaji (Kobe) earthquake. The first response team consisting of 3 pathologists and 3 dentists departed Tokyo at 10:00 pm on the same day, traveling in vehicles provided by the police due to paralysis of the public transportation network. Examination of victims in Rikuzentakata, Iwate began the following afternoon. Most remains were immersed in water and covered with mud, but some victims had suffered extensive burns. Hypothermia would have also caused death in some cases. The Headquarters successively organized and dispatched JSLM members through July 6. Some 122 pathologists and physicians contributed a total of 1,090 person-days of work, and 31 dentists did a total of 298 person-days of work at the disaster sites. Aside from local physicians and dentists

associations, the Japan Dental Association and Japan Self Defense Force also sent support teams to the affected areas.

As of July 28, 2011, the remains of 15,642 victims, including 27 non-Japanese, had been recovered, and another 5,001 people were still listed as missing. Nearly 90% of the victims were positively identified from personal belongings and body features including dentition in majority of them. More extensive identification attempts using a computer-assisted dental comparison system and kinship analysis of DNA profiles are now in process. The latter is conducted by the National Research Institute of Police Science and scientific criminal investigation laboratories of regional police headquarters. Fingernails and blood are the first choice DNA source.

No fewer than 25 countries, regions, and international organizations have sent rescue teams and other specialists in the disaster areas. However, partly because of the language barrier, so far direct overseas assistance in the examination and identification of bodies has not been possible.

Recently, the Japanese police has been increasing the number of prefectural police officers, especially those in charge of the investigation of death scenes and victims. This was effectual for handling the large number of remains through wide-range mobilization from outside the devastated areas. On the other hand, the medico-legal investigation system, such as the medical examiner system, is immature and remains as an issue to be solved from the standpoint of mass disaster management.

Key words: Natural disaster, Personal Identification, Japan