Special Article

Role of Forensic Doctors in Thailand's Tsunami: Experiences from Chulalongkorn Medical School

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Personal identification was the major task of forensic doctors in Thailand's Tsunami. Identification can be done by visual identification, circumstantial evidence and physical evidence. Among the physical evidences dental data is the most effective method of identification, followed by fingerprint and DNA. A disaster Identification team should be set up to handle the problems and plan for the future.

Keywords: *Tsunami disaster, Forensic doctor, Personal identification*

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Tsunami Disaster

Thailand was one of the countries affected by the Tsunami, a natural disaster on 26 December 2004. The epicenter in the Indian Ocean of 9.0 Richter magnitude quake was at northwest of the Indonesia's Sumatra island at 7.58 a.m.(Thailand time) with a series of aftershock waves. The tidal waves reached 6 provinces in the west coast of southern Thailand on 10.45 a.m., 5,395 deaths, 8,457 injures and 2,991 missing[1]. 1,895 bodies[2] are waiting for identification.

Laws and regulations

According to the Thai Criminal Procedural Code B.E.2477 (21st revision B.E 2542)[3] Act 148-154, all unnatural deaths should be examined by forensic doctors and police officers. The unnatural deaths include suicide, homicide, injured by animals, accidents and undetermined, a natural disaster causing death is identified as unnatural death since it is an accidental death. The postmortem examination is aimed for (personal identification; identify place, time), cause and manner of death, and also the accused (if any). The law states that it is the responsibility of the police officers to notify the forensic doctors in performing postmortem examination.

Role of Thai Forensic Doctors

Since the Tsunami disaster in 6 provinces in the southern part of Thailand, the Andaman sea which are Phuket, Phang-Nga, Krabi, Trang, Ranong and Satool causing numerous deaths, missing and injuries. The forensic doctors from medical schools, the Ministry of Public Health, Forensic Medicine Institute of Royal Thai Police Department and Forensic Sciences institute…etc., as well as medical doctors from various parts of Thailand went to the affected site, as a forensic doctor the major responsibility is to perform postmortem examinations especially for personal identification. In December 28, 2004, the cabinet distributed the affected areas to the forensic teams as follows:

1. Phuket: Provincial Head office, Chulalongkorn University and Forensic Medicine Institute of Royal Thai Police Department

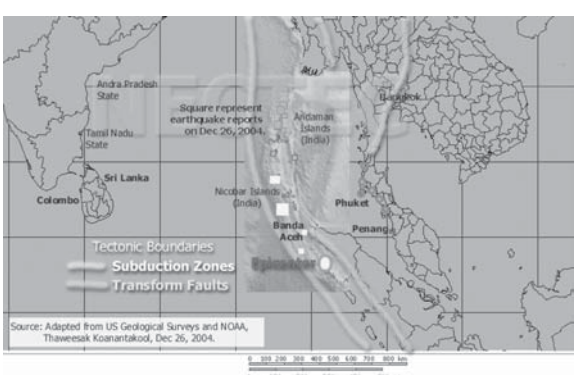

Fig. 1 The epicenter of Tsunami natural disaster in Indian Ocean on 26 December 2004, 6 affected provinces on west coast of Thailand are shown in black spots (picture adapted from US Geological Surveys and NOAA)

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2. Phang-Nga: Institute of Forensic Science, Mahidol University(Faculty of Siriraj and Ramathibodi), Prince of Songkla University, Chiangmai University, Chulalongkorn University and Khon Kaen University

3. Krabi: Forensic Medicine Institute of Royal Thai Police Department and Chulalongkorn University

4. Ranong, Trang and Satool: Provincial head office

The Institute of Forensic Medicine, Ministry of Interior supported fingerprint specialists to affected site on request.

Postmortem examination of the bodies

Although the postmortem examinations have to be done according to the regulations and the standard protocol, however, in the mass natural disaster the focus should be put on personal identification, determining the time of death and the cause of death. According to Thai Civil and Commercial Codes, all deaths in mass disaster can be concluded as the same time, furthermore, and due to Tsunami disaster, the preliminary cause of deaths can be concluded as drowning if there is no serious injuried found. Then the crucial problem of postmortem examination is focused on personal identification. The accurate identification is to match ante-mortem and postmortem data which can be obtained from:

1. Circumstantial evidences: personal effects such as clothing, jewelry and personal belongings, descriptions of these findings should be recorded in details first for comparison. However, it must be kept in mind that loose objects can easily be found in the wrong body, whether by mistake or intentionally. Personal effects may constitute valuable circumstantial evidence of identity, but never proof. They are merely factors which, combined with other, make a case for positive identification.

2. Physical evidence:

2.1 external examinations of general features and specific features

2.2 internal examinations of medical evidence, dental evidences and laboratory findings.

In Thailand, the protocol for identification of the victim from a disaster is declared in the Announcement of the National Police Office on Postmortem Examination B.E.2543[4]. It is stated that the details of body examinations should be recorded in a Disaster Victim Identification Form of Interpol for the purpose of worldwide data sharing for ante-mortem and postmortem comparison in the Interpol database system.

Disaster Victim Identification (DVI) Form[5]

The DVI form consists of ante-mortem form (yellow) and postmortem form (pink) with 7 sections:

Section	Ante-mortem from	Post-mortem form
A1 and A2	Personal data of the possible victim or missing person	NA
B	NA	Recovery of the body from site
C1-C3	Description of effects C1-clothing and shoes C2-personal effects C3-jewelry	Photograph the body first, then remove any clothing and jewelry from the body
D1-D3	Physical descriptions	Physical descriptions
D4	Distinguishing marks : tattoos	Distinguishing marks : tattoos
E1-E2	Medical information that may assist in identification	Data obtain by internal examination that may assist in identification
F1-F2	Dental information	Dental data
G	Any further information that may assist identification	Any further information that may assist identification

Sections E to G are obtained from the medical examination

Problems encountered in Personal Identification

At the beginning, since there are many groups of people engaged in the scene, both officials and volunteers, and this is the first experience of a Thai Disaster Team in a tsunami, then the DVI protocol are not fully deployed. Various types of protocols have been used in personal identification which are the report forms of unknown bodies (Thailand National Police Office), ante-mortem (personal history of disaster victim) and post-mortem(examination of disaster-victim) form of the Federal Bureau of Investigation (FBI), U.S. Department of Justice and local made report form, these caused problems in transferring data into the DVI database for matching and comparison. However, before the beginning of TTVI team (Thailand Tsunami Victim Identification) in corporation with the DVI team in February 4, 2005: 1,618 bodies were released under visual recognition, personal effects and dental data and 3,777 bodies left were transferred to TTVI.

Work flow of TTVI in releasing in bodies is shown below[6]

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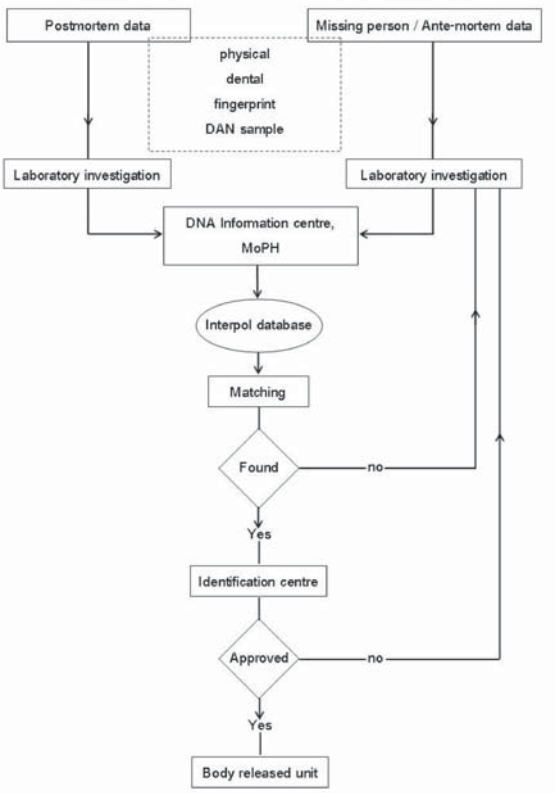

At present (June 29,2005) ,identification of the 3,777 deaths gives results of 1,882 bodies released and 1,895 left unidentified. The details are shown in the table below:

Identified by	number	percentage
Dental	1,352	71.84
Fingerprints	454	24.12
DNA	54	2.87
Physical evidences	22	1.17
Total	1,882	100.00

Since the decomposed bodies are beyond recognition, and the biological samples of the unidentified bodies had been collected for DNA laboratory process, analysis of a biological sample makes it possible to link an individual to ancestors and descendents, and the data from these analyses can easily be computerized. Biological sample analysis can result in: the genetic linking of a victim to members of his natural family, the conclusion that victims were not related and the matching of body parts. Then in helping identify relative or friend, not only taking the blood sample from the family, relatives or next of kin one should try to prepare as many of the following items as possible[6].

· Samples like: toothbrush; underwear, hair, shaver etc.

· Dental and medical records - particularly if they have had an operation

· Doctor or Dentist contact information

· Photographs or information about jewelry that they were wearing. Unique watches or clothing might also be useful.

· Any birthmarks, tattoos, scars, moles, etc.

The above findings including fingerprint and DNA report will be sent to the database system looking for positive matching.

Lesson Learned

1. Disaster Victim Identification, normally the responsibility of the police, is a difficult and has to involve the active participation of many other organizations and agencies. This can only be brought to a successful conclusion if properly planned and well deployed.

2. The ultimate aim of all disaster victim identification is to establish every victim by comparing and matching accurate ante-mortem and postmortem data[7]. Well trained officers or volunteers in collecting ante-mortem data from the bereaved families are needed.

3. Manpower strength available for instant activation should be established. These should include local personnel, law enforcement agencies, transportation companies as well as specialists such as forensic odontologists, forensic pathologists, forensic anthropologists, fingerprint specialists…etc., with good teamwork.

4. Equipment and supplies should be maintained in a ready condition at all times. The material should be periodically checked, outdated materials should be replaced as necessary. The lists of those should be shown for prompt use.

5. Preparation of morgue facilities, by considering the following factors, space, securities, communication facilities, electrical provisions, accessibilities to disaster sites, assembly point, viewing space. In Thailand, in spite of the hot climate which causes rapid decomposition, the freezers should be the most important in keeping a huge number of bodies waiting for photographing, fingerprinting and performing post-mortem examination.

6. Communication may cause confusion to some extent, it is very important to establish a communication centre, the people in charge of the centre should responsible for the release of the information to the media. There should be limited number of people who

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can access the information at any given time and decide what information can be made public.

7.The education and training of the disaster team and related group should be done periodically to ensure readiness of the team, to update and refine the protocol for better performance.

Conclusion

Personal Identification in the Thailand Tsunami is an ongoing process. It is the role of forensic doctors to clear up the unidentified bodies. The ante-mortem dental information seems to be the best evidences for comparing with the postmortem findings. However, genetic identification technique is also a powerful forensic method and can successfully be applied to the identification of disaster victims. Obtaining, storing and analyzing these samples from both victim and potential relatives require special expertise and should always be undertaken by a scientific or medical expert for better result. In fully decomposed bodies, forensic anthropology can play a major role in solving the problems.

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บทบาทของแพทย์นิติเวชในเหตุธรณีพิบัติสึนามิ: ประสบการณ์จากคณะแพทยศาสตร์จุฬาลงกรณ์ มหาวิทยาลัย

นันทนา ศิริทรัพย์, เศวต กรรณล้วน

การพิสูจน์เอกลักษณ์บุคคลเป็นงานสำคัญของแพทย์นิติเวชในเหตุธรณีพิบัติสึนามิในประเทศไทย การพิสูจน์เอกลักษณ์บุคคลสามารถกระทำได้จากการชี้ตัว จากบันทึกรูปพรรณสัณฐาน สิ่งของติดตัว และหลักฐานทางการแพทย์ ข้อมูลทางทันตกรรมเป็นหลักฐานทางการแพทย์ที่ชี้บ่งเอกลักษณ์บุคคลได้มากที่สุด รองลงมาคือลายพิมพ์นิ้วมือ และลายพิมพ์ดี เอ็น เอ ควรพิจารณาจัดตั้งคณะทำงานพิสูจน์เอกลักษณ์บุคคลใน เหตุธรณีพิบัติเพื่อเตรียมการรองรับปัญหา และวางแผนดำเนินงานในอนาคต

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