Scholars Journal of Applied Medical Sciences (SJAMS) **ISSN 2320-6691 (Online)**
Sch. J. App. Med. Sci., 2016; 4(6D):2129-2132 **ISSN 2347-954X (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com DOI: 10.36347/sjams.2016.v04i06.053

Short Communication

Disaster Imagination Game at Izunokuni City for preparedness for a huge Nankai Trough earthquake

Youichi Yanagawa M.D., Ph.D.[1], Ikuto Takeuchi MD.[1], Kei Jitsuiki M.D.[1], Toshihiko Yoshizawa M.D.[1], Kouhei Ishikawa M.D.[1], Kazuhiko Omori M.D., Ph.D.[1], Hiromichi Osaka M.D., Ph.D.[1], Koichi Sato MD.PhD.[1], Naoki Mitsuhashi MD.PhD.[1], Jun Mihara MD.PhD.[2], Ken Ono MD.PhD.[3]
[1]Shizuoka Medical Research Center for Disaster, Juntendo University, Japan
[2]Izunokuni branch, Tagata Medical Association, Japan
[3]Izu Health and Medical Center, Japan

***Corresponding author**
Youichi Yanagawa, M.D., Ph.D
Email: yyanaga@juntendo.ac.jp

Abstract: The Disaster Imagination Game (DIG) is a newly developed method for disaster drills based on the knowledge of the Commanding Post Exercises of the Japan Self Defense Force, which uses maps and transparent overlay. The Izunokuni City office held a local liaison meeting for disaster medical care. The related organizations shared all information and confirmed the cooperating system for the huge disaster. In addition to providing information of various hazards created by the huge Nankai trough earthquake, the DIG was performed by the participants. The worst case scenario for such a huge Nankai Trough earthquake would be for a magnitude 9-class earthquake to hit the central and western parts of Japan. After this procedure, the local citizen recognized the importance of self-help and mutual assistance. In addition, vitalization of self or public transportations was an increasingly important task because multiple roads could not be utilized due to quake liquefaction damage or landslides. After exchanging ideas and participating in the DIG, the participants deepened their understanding on relief activities. In addition, the DIG resulted in understanding between each participant and building face-to-face relationships, and the most important factor for disaster relief was accomplished.
Keywords: Disaster Imagination Game;Izunokuni; huge Nankai Trough earthquake.

INTRODUCTION

Japan is located at the junction of four continental plates (North American, Eurasian, Philippine Sea and Pacific) where earthquakes frequently occur. Recently, the Great East Japan Earthquake, which was a magnitude 9.0-class earthquake, occurred on March 11, 2011 and triggered powerful tsunami waves that reached heights of up to 40 meters. The earthquake and tsunami caused extensive and severe structural damage. Izu peninsula, where Izunokuni City is located, is in Shizuoka prefecture, which is approximately 130 km from Tokyo, Japan. According to a report from the National Research Institute for Earth Science and Disaster Prevention, Izu peninsula is also located just on the border between the Philippine Sea and Eurasian plate[1,2]. In this area, huge earthquakes, which were called Tokai earthquakes, have occurred repeatedly every 100 to 150 years. In addition, the Japanese government re-estimated the damage that would occur from a huge Nankai Trough earthquake in the Pacific Ocean, which has historically occurred several times in Japan and is predicted to occur again in the near future. The worst case scenario for such a huge Nankai Trough earthquake would be for a magnitude 9-class earthquake to hit the central and western parts of Japan, including Izu peninsula, followed by the generation of a massive tsunami along the coast. Such a scenario could lead to as many as 323,000 deaths in Japan[3].

MATERIAL AND METHODS

This study used narrative methods concerning Disaster Imagination Game (DIG) at the Izunokuni City office.

1). Explanation of the DIG[6]

The DIG is a newly developed method for disaster drills based on the knowledge of the Commanding Post Exercises of the Japan Self Defense Force, which uses maps and transparent overlay.

Participants of the DIG are appointed to members of the virtual commanding post of disaster relief activities. By recording various details on maps, participants can easily grasp the situation of affected areas and also easily discuss how to command relief activities.

The rules for playing the DIG are as follows: 1) lay a large blank map of the community on the table; 2) put several layers of transparent plastic sheets over the map and mark the most important facilities in the region on the first layer of the transparent paper (e.g., refuge places, hospitals, schools, town hall); 3) flip the transparent layer over and mark roads and expressways, rivers and higher grounds with different colors. The player can choose landmarks, relics and facilities that are town priorities, and houses of people with different disabilities and older and sick individuals can also be marked; 4) draw conditions of predicted damage (e.g., cut in supplies, closed roads, cut in electric power); 5) draw the evacuation plan on the last transparent layer while considering the conditions and important facilities; and 6) compare the map of marked safe places with an existing map of flooding and other dangers in the region (depending on the chosen disaster). Most participants will discover that not every "safe place" is actually safe. The participants are expected to mark many features on the map using markers and stickers. Through this activity, they find risks and problems that the community has in coping with disasters, and discuss them at the end of the workshop.

RESULTS AND DISCUSSION

The Izunokuni City office held a local liaison meeting for disaster medical care on March 2, 2015. Participants included the mayor and official workers of Izunokuni City and representatives from a local medical association, a fire department (Tagata), a police department (Ohito), a local hospital (Izu Health and Medical Center), local citizens and a disaster base hospital (Shizuoka Hospital, Juntendo University) which work as an emergency and critical care center during peaceful times. The related organizations shared all information and confirmed the cooperating system for the huge disaster. First, each representative presented his own action for the huge disaster, such as the main roles, command control system, tools of communication, means of transportation, staffing or stocking goods. Second, the official workers of Izunokuni City presented a plan of temporarily building a first-aid station managed by the local medical association, evacuation areas for when an earthquake has occurred, scheduled support from the military executed by advance planning of concrete, urgent procedures in the huge Nankai trough or Tokai earthquake, and the disaster recovery schedule. After this presentation, in addition to providing information of various hazards created by the huge Nankai trough earthquake, the DIG was performed by the participants. After this procedure, the local citizen recognized the importance of self-help and mutual assistance due to staff shortages for search and rescue teams provided by public bodies in the hyperacute phase of the huge Nankai trough earthquake. In addition, vitalization of self or public transportations was an increasingly important task because multiple roads could not be utilized due to quake liquefaction damage or landslides. The Izunokuni City office acquired new objectives for mutual coordination among the related organizations in order to provide and promote efficientsupport at the time of disaster for citizens. After exchanging ideas and participating in the DIG, the participants deepened their understanding on relief activities. In addition, the DIG resulted in understanding between each participant and building face-to-face relationships, and the most important factor for disaster relief was accomplished.

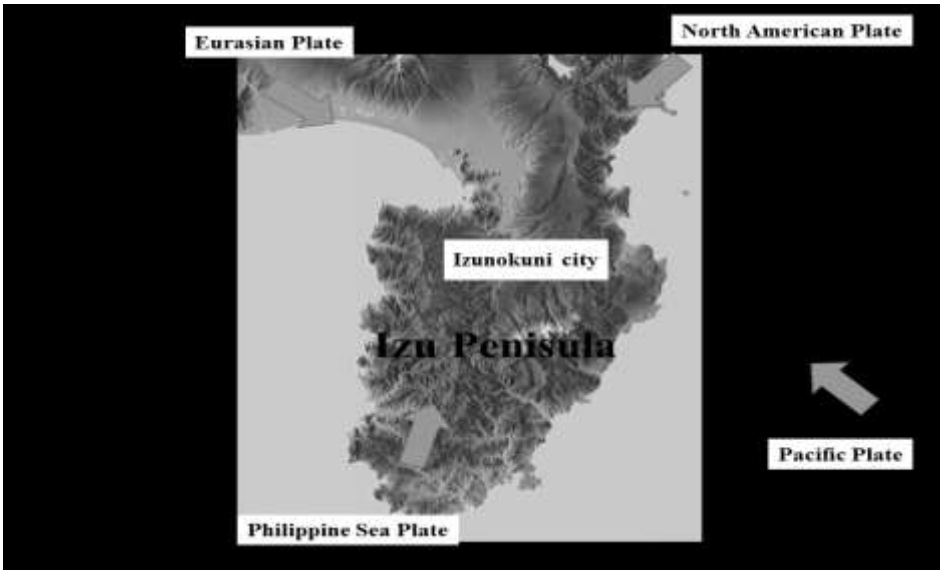

Fig-1：Location of Izunokuni City, Izu peninsula and each plate Izu peninsula is located at the boundary between the Pacific and Philippian sea plates.

Fig-2：Seating table of participants (upper image: seating table, lower image: representative picture). The figure shows the seating table of participants, including citizens, city office workers, and representatives from the local police and fire departments and the local and disaster base hospitals.

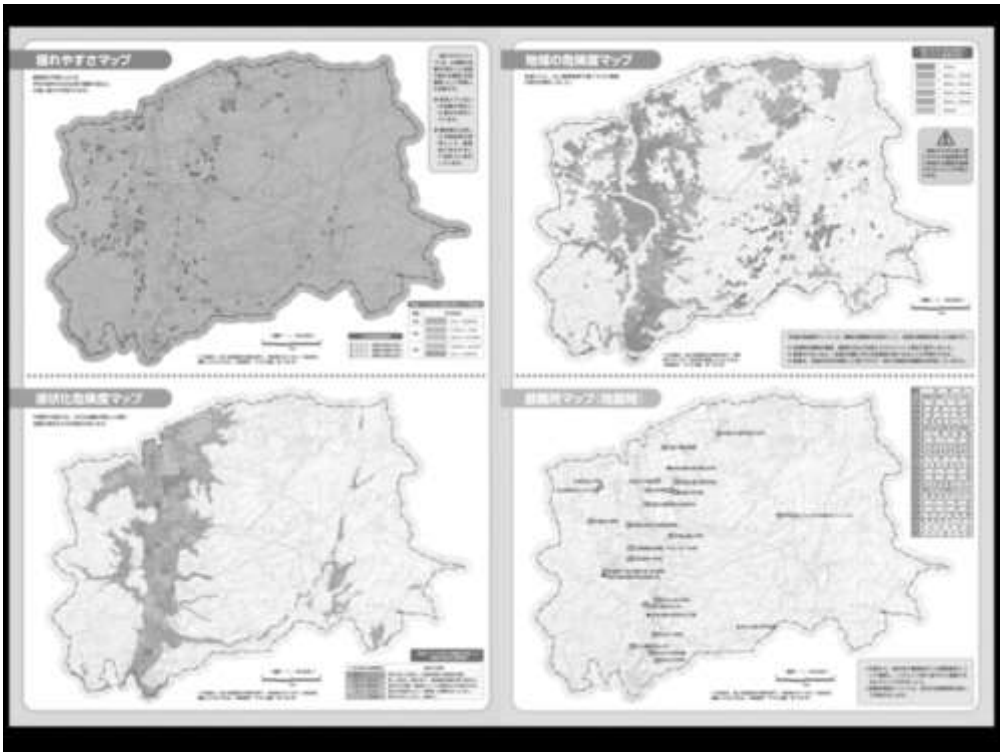

Fig-3：Hazard maps during simulation of an earthquake. The figure shows an example of a hazard map. Left upper image: severity of shaking, right upper image: breakability due to aging of the house, left lower image: severity of quake liquefaction damage, right lower image: location of evacuation areas.

Fig-4：Picture of a discussion after the disaster imagination game.Participants discuss problems concerning transportation

For natural disasters, the demands of public health emergency response require innovative public health workforce readiness training[4]. The DIG training provides health system for disasterat the Izunokuni City Office with a list of strategies and activities to be considered in operational planning and actions[5]. In addition, the present training may be able to foster a culture of professional and personal readiness[4].

Acknowledgement:

This research is supported by MEXT (The Ministry of Education, Culture, Sports, Science and Technology)-Supported Program for the Strategic Research Foundation at Private Universities 2015-2019 for the constitution of total researching system for comprehensive disaster medical management, corresponding to wide-scale disaster

REFERENCES

1. Home page of National Research Institute for Earth Science and Disaster Prevention. Web site. http://www.bosai.go.jp/e/
2. Yanagawa Y, Omori K, Obinata M, Mishima K, Ishikawa K, Osaka H, Oode Y, Sakurada M, Muramatsu S. Shizuoka Prefecture Disaster Drill Involving the Japanese and US Military. Disaster Med Public Health Prep. 2015;9:476-7.
3. Yanagawa Y, Nakamori T, Ishikura K, Ishii F, Yamaguchi E, Kouzu S, Saruta M, Kitakawara S, Aoki M, Ohta M, Kogasaka N, Takekawa R, Koido Y: Disaster drill for a huge Nankai Trough Earthquake and the construction of a medical staging care unit on a navy destroyer in Japan. EMS World 2013; Nov 27. Web site. http://www.emsworld.com/article/11251609/japan-disaster-drill-simulates-nankai-trough-earthquake-in-pacific-ocean-and-medical-staging-unit-on-navy-destroyer
4. Barnett DJ, Everly GS Jr, Parker CL, Links JM. Applying educational gaming to public health workforce emergency preparedness. Am J Prev Med. 2005;28:390-5.
5. Ardalan A, Rajaei MH, Masoumi G, Azin A, Zonoobi V, Sarvar M, Vaskoei Eshkevari K, Ahmadnezhad E, Jafari G.2012-2025 Roadmap of I.R.Iran's Disaster Health Management. PLoS Curr. 2012; 4:e4f93005fbcb34.
6. http://www.games4sustainability.org/gamepedia/disaster-imagination-game/