

Disaster Victim Care by Emergency Surgeons One Year after the Great East Japan Earthquake

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Abstract

Purpose: This study examines patterns of diseases that were treated at the Iwate Prefectural Hanaizumi Regional Clinic after the Great East Japan Earthquake, which occurred on March 11, 2011, and caused serious damage in Japan.

Methods: Data on patients' address, age, sex, and medical conditions, obtained from medical records of 583 (178 men, 405 women) patients who visited the clinic during that time period were analyzed.

Results: The diseases for which the clinic provided care were the same as those listed in a textbook of emergency medicine and previous reports.

Conclusions: It is important that emergency surgeons understand these common post-disaster disease patterns in order to provide disaster victims with appropriate care.

Keywords: Great east Japan earthquake; Disaster victim care; Disease pattern About Sepsis and Pre-hospital Care

Introduction

The Great East Japan Earthquake, which occurred on March 11, 2011, caused severe damage in Japan. As with past earthquakes and tsunamis, victims from Iwate prefecture who lost their families and homes were given refuge by Ohunato, Kesenuma, and Rikuzentakata prefectures for a long period of time. The authors hypothesized that diseases occurring in the aftermath of this earthquake would be the same as those occurring after other similar disasters. They performed disaster victim care at the Iwate Prefectural Hanaizumi Regional Clinic, and tested this hypothesis.

Materials and Methods

This paper sheds light on the disaster victim care performed by the authors from April to September in 2012 at the Iwate Prefectural Hanaizumi Regional Clinic. All 583 (178 men, 405 women) patients who visited the clinic during that time period were included. The authors selected this period because many refugees who lived in this region were originally from coastal regions, although one year and a half have elapsed since the earthquake. Data on patients' address, age, sex, and medical conditions were obtained from medical records.

Results

Most of the patients were older adults (Figure 1). The largest group was the 80–89-year-old group, followed by the 60–69- and 70–79-year-old groups. Twenty percent of the patients were tsunami refugees who had moved to the Hanaizumi area. The average number of patients who visited the clinic was approximately 26.2 each day prior to the Great East Japan Earthquake. Following the earthquake, the number of patients increased to 31–40 patients per day in August and September 2012.

The medical staff that provided disaster victim care included 4 doctors, 1 internist, 2 emergency surgeons, 1 part-time neurosurgeon, 3 nurses, 1 radiological technician, 1 laboratory technician, 1 driver for medical visits, 7 clerks, and 2 guards. Given that the Iwate Prefectural

Clinic is a small regional clinic, it had limited laboratory testing capacity. Only the following tests were available: blood tests, urine tests, electrocardiography (ECG), Holter ECG, ankle brachial index, echocardiography and abdominal ultrasonography, X-ray scans, and computed tomography scans.

The authors found that 50% of both men and women had hypertension (Table 1). The second and third most common diseases were diabetes and stroke sequelae for men, and hyperlipidemia and diabetes for women. Other diseases included various endogenous and exogenous diseases (Table 2). Most of these diseases were being treated in the clinic prior to the earthquake. However, the number of patients with insomnia and depression increased after the earthquake.

In treating patients, the authors also worked with other medical institutions. Specifically, they consulted the general hospital in Ichinoseki City about patients in need of admission. When patients were discharged from the general hospital, they followed up with them at the clinic. They also provided other forms of disaster relief for patients, such as medical visits at patients' homes and a conference about common diseases and disaster victim care (Table 3).

Discussion

The Great East Japan Earthquake damaged a large number of buildings and considerable infrastructure in more than 17 prefectures. Over 19,000 people died or went missing in 12 prefectures, and more than 5,000 people were injured in 20 prefectures [1].

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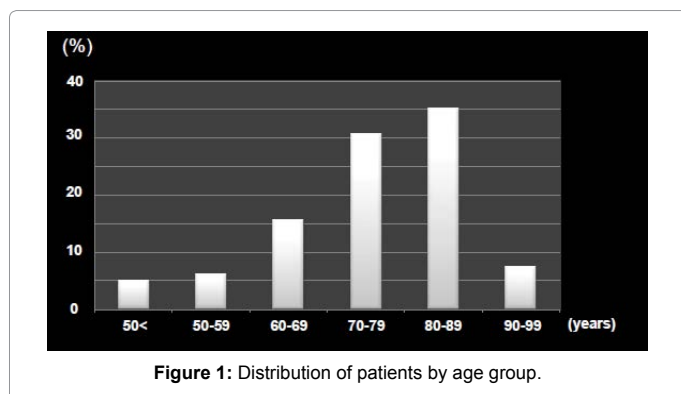


Figure 1: Distribution of patients by age group.

Ranking	1	2	3	>4	Total
Male	Hypertension 46%	Diabetes 12%	Cerebral infarction sequelae 7%	Other 35%	100 %
Female	Hypertension 50%	Hyperlipidemia 13%	Diabetes 7%	Other 30%	100 %

Table 1: Gender-wise breakup of diseases.

Quickly after the disaster, medical staff from the Keio University School of Medicine and Medical Rescue Teams performed rescue and disaster victim care [2]. Specifically, the Mobile Eye Clinic at the Department of Ophthalmology provided eye care, the Department of Neuropsychiatry provided psychosocial support, and Kikuchi cared for children at Koriyama, Fukushima [3-5]. The authors performed disaster victim care at the Iwate Prefectural Hanaizumi Regional Clinic.

In performing disaster victim care, the authors relied on Tintinalli's Emergency Medicine, which summarizes common diseases that occur after a natural disaster, including the acute and delayed post-disaster phases [6]. Communicable diseases, infectious diseases, trauma, and mental health conditions are listed as the main diseases that occur after a natural disaster. They are accompanied by different medical problems.

For instance, communicable diseases are accompanied by respiratory infections, gastrointestinal (GI) infection, diabetes, and renal failure, while infectious diseases, such as vector-borne diseases, are accompanied by soft tissue infections and open fractures. Trauma is characterized by sprains, strains, falls, lacerations, burns, and fractures, while mental health conditions are characterized by high stress reactions, depression, and exacerbation diseases.

Some of these diseases occurred after a 2011 earthquake. To treat these diseases, medical visits were performed in Rikuzentakata, Iwate, from March 2011 to March 2012 [7]. Chronic cerebrovascular disease was the most common disease (19%), followed by lifestyle-related diseases (i.e., hypertension, diabetes; 12%), dementia (11%), chronic orthopedics disease (9%), chronic respiratory disease (7%), and malignant tumor (7%). These disease patterns resemble the disease patterns the authors observed after the Great East Japan Earthquake. This suggests that disease patterns tend to be similar after natural disasters. Thus, it is important that emergency surgeons understand common post-disaster disease patterns in order to provide disaster victims with appropriate care.

Endogenic	
✓	Pneumonia, COPD, Asthma
✓	Aortic dissection, Heart failure, Arrhythmia
✓	Ileus, Peritonitis, Melena
✓	UTI, Renal failure
✓	Collagen disease
✓	Malignant tumor after surgery (thyroid, mammary gland, lung, stomach, liver, pancreas, bile, colon)
✓	Perianal abscess, Subcutaneous abscess
✓	Epilepsy
✓	Anaphylaxis
✓	Insomnia, Depression
Exogenic	
✓	Decubitus
✓	Laceration
✓	Strain and Sprain
✓	Burn, Traumatic blood pneumothorax

Table 2: Endogenic and exogenic.

A limitation of this study is that the authors could not provide clear statistics of these diseases before and after the Great East Japan Earthquake. Such data could not be obtained because many of the patients were refugees from coastal regions such as Ohunato. As they did not visit this clinic before the earthquake, there were no adequate medical records. Medical records created before 2011 in the coastal regions were destroyed by the tsunami; hence, the authors could not obtain detailed information on patients' conditions before the Great East Japan Earthquake.

However, the present findings, along with the textbook of emergency medicine and a previous report, show that disease patterns are similar after major disasters such as the Great East Japan Earthquake.

Conclusion

Given that textbook patterns of post-disaster medical conditions are similar to those of the Great East Japan Earthquake, it is important that emergency surgeons and physicians understand common textbook post-disaster patterns in order to provide care.

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