

Management of welfare evacuation shelter in chronic stage of the Great East Japan Earthquake

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— ABSTRACT —

Background: Great East Japan Earthquake was the most powerful earthquake in 2011 and associated with the Fukushima Nuclear Plant 1 meltdown.

Methods: A welfare evacuation shelter was installed in the City A, most damaged area by earthquake and tsunami. Vital sign records of the welfare evacuation shelter were summarized and demonstrated.

Results: Data loss in records was remarkable due to repeated aftershocks. On the other hand, notable prominent changes were not recognized. There was no increase in systolic and diastolic blood pressure expected by stress, and no increase in heart rate is also noticed. In body weight and Functional Independence Measure (FIM), there were no cases of deterioration. In some cases, improvement of FIM were observed.

Conclusions: The data might be educationally significant for medical staff in a large scale disaster. It was also a place for medical professionals to learn that the elderly people are aware of the high potential and that relationships that derive their potential are important. In addition, its potential should be drawn out by strengthening the connection with society as a result of attention and concern to establish a well-balanced living environment as welfare evacuation shelter.

Key words; Welfare evacuation, Shelter, Vital Sign, FIM, Great East Japan Earthquake

Introduction

Japan frequently experiences large-scale earthquake disasters. Among them, the recognition of CWAP (Children, Women, Aged people, Patients / Poor), a vulnerable people for disaster, is increasing. In June 2008, guidelines concerning the establishment and operation of welfare evacuation centers have been prepared and published from the Ministry of Health, Labor and Welfare. However, this welfare evacuation shelter is not fully recognized, and it is the current situation that the existing facilities such as geriatric

health facilities are designated in few municipalities.

In the Great East Japan Earthquake, a welfare evacuation shelter with integrated functions was installed by gathering people who required welfare care from distributed primary evacuation shelters in the city A of A prefecture where suffered the greatest damage. Purpose of this study is to summarize the vital signs within welfare evacuation center with rehabilitation service, opened in the city A, from a view of response to disaster medical management in an aging society.

Materials and Methods

The Great East Japan Earthquake was a huge disaster that was massive compared with the earthquake, that the medical and welfare staff in the afflicted area could not move due to extensive floods caused by the tsunami disaster, disaster occurred Immediately after the gasoline shortage, the damage was enormous, and the initial response was impossible. In the guidelines concerning the establishment and operation of welfare evacuation shelter, the establishment period was set as the maximum within seven days from the day of the disaster occurrence. However, in the Great East Japan Earthquake, it was impossible.

Activities as a local coordinator in the afflicted area was started on March 22 (the 11th day of the disaster), and initially dispatched by a mutual collaboration support system for 100 nationwide gathered disaster support nurses. There were 49 disaster support activity places in the targeted area, 6 medical facilities, 3 social welfare facilities, 1 health center, 38 primary evacuation centers, 1 welfare evacuation center there were. In the evacuation shelter, a 24-hour support nurse is stationed, responding to sudden illness of sufferers, health counseling and management, cooperating with the circulation medical team by Japan Disaster Medical Assistant Team (DMAT) and the local medical staff, while promoting severity and activities to prevent spread of infectious diseases . Also, in order to care for elderly people who need assistance or to prevent life-inactive illnesses, while strengthening support activities in the target city A, where was remarkable delay in recovery. Evaluation for

needs including nursing care needs, control of infectious disease, lifeline restoration situation, meal situation, etc. became prominent and support development for welfare evacuation shelter establishment while aggregating and analyzing that information were carried out.

It is predicted that the number of elderly people, who suffer life-inactive disease and need long-term care, will increase. On April 17, there were 4,765 refugees on 17 evacuation centers in A city, 411 of whom had some medical needs, 47 people with care needs, 24 people with mental healthcare needs.

From the beginning of April, the joint conference on evacuation centers held by joint medical teams, municipal hospitals, emergency center staff, administrative officials, nurses, external experts such as rehabilitation and nutritionists, was started. However, both the quality and quantity of information varied, and the meeting continued to exchange ideas. Therefore, the conference was revised to visualize needs and resources, to promote participants' common recognition and problem-solving thinking. Under such circumstances, the need for welfare evacuation centers and the necessity of secondary evacuation became commonly recognized by participants. However, the problem was left to the decision of installation by the basic municipality that is the establishment body of the welfare evacuation shelter. Finally, the usefulness and shared issues such as closing time as administration and examined solutions was confirmed. As a result, after the adjustment with the Ministry of Health, Labor and Welfare, the

establishment of two welfare evacuation shelter was decided.

In this welfare evacuation shelter, the vital signs of evacuees recorded sequentially, 1) systolic blood pressure, 2) diastolic blood pressure, 3) heart rate, 4) weight, 5) Functional Independence Measure (FIM) which is the evaluation index of ADL (Activity of Dairy Life) were recorded. We analyze the data retrospectively.

Results

Of the vital signs of the evacuees at the welfare evacuation shelter, 1) systolic blood pressure, 2) diastolic blood pressure, 3) heart rate, 4) body weight, 5) FIM are shown below.

1) **Systolic blood pressure** (vertical axis: mmHg horizontal axis: day from welfare evacuation center entry)

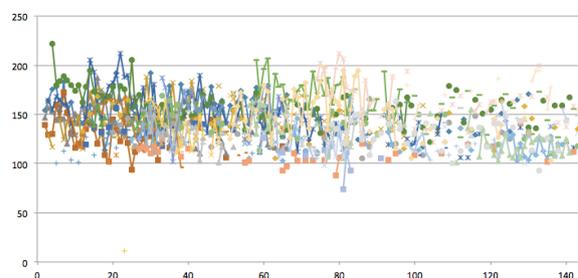


Figure 1: Systolic Blood Pressure

2) **Diastolic blood pressure**

(vertical axis: mmHg horizontal axis: number of days from welfare evacuation center entry)

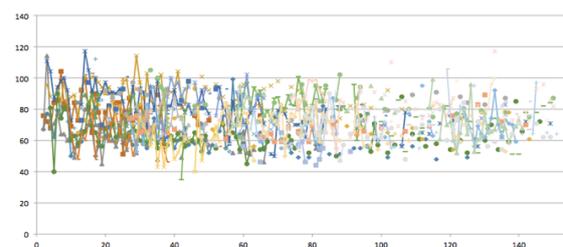


Figure 2: Diastolic Blood Pressure

3) **Heart rate** (vertical axis: times / minute horizontal axis: days from welfare evacuation center entry)

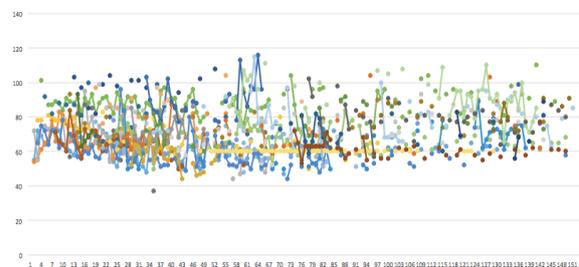


Figure 3: Heart Rate

4) **Body weight** (vertical axis: kg horizontal axis: number of days from welfare evacuation center entry)

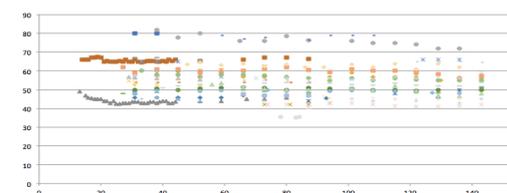


Figure 4: Body Weight

5) **FIM** (Functional Independence Measure) at entry and discharge

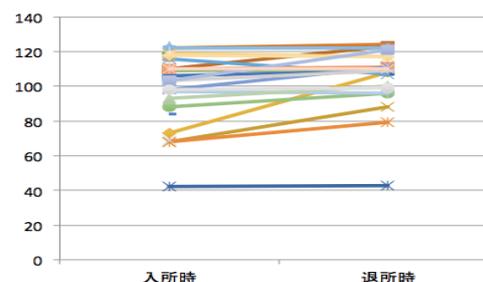


Figure 5: Functional Independence Measure

Discussion

Consideration for CWAP (CWAP; children, women, aged people, patients / poor) is required for disaster medical care. Since the Great Hanshin-Awaji Earthquake, the concept of CWAP became noteworthy not only in medical response

in the acute phase of disaster such as rescue and triage, but also in medical correspondence in evacuation centers and temporary housing in the recovery and/or reconstruction period in the chronic phase.

In Japan, the aging rate, which was 14.5% at the time of the Great Hanshin-Awaji Earthquake, was 17.3% in 2000 and 20.1% in 2005, Japan's 2004 Chuetsu Earthquake, 2007 Noto Peninsula Earthquake, 2007 With the Chuetsu Oki Earthquake, the need for care for the elderly has come to be recognized. Among victims of disasters, elderly people account for 66.2% for the 2004 Chuetsu Earthquake, 65.1% for the heavy snowfall in 2006 and 78.6% for the 2007 Chuetsu Oki Earthquake

In 2006, the Cabinet Office issued guidelines for evacuation assistance for people who need assistance during disasters, and municipalities throughout the country are working to improve the evacuation support plan and the list of persons who need assistance during disasters. At the 2007 Noto Peninsula Earthquake, a welfare evacuation office that officially accommodated the CWAP was first established, and nine locations were set up in the 2007 Niigata Chuetsu Oki Earthquake.

The Ministry of Health, Labor and Welfare announced in June 2008 guidelines concerning the establishment and operation of welfare evacuation shelters intended to be utilized for preparatory measures and manual preparation by local governments. In response to the guidelines, some local governments had been preparing welfare management in disaster, but the Great East Japan Earthquake occurred in March 2011 in a situation where it is still not enough. The aging

rate in 2010 was 23.1% nationwide average, it seems that the Tohoku region exceeded the national average in that region, and it was thought that it was affected by being a huge and extensive damage, but the establishment and operation of welfare evacuation shelter It was a difficult situation to respond to the guidelines on guidelines.

In this research, we observed the data from a welfare evacuation shelter, 1) systolic blood pressure, 2) diastolic blood pressure, 3) heart rate, 4) body weight, 5) FIM.

Epidemiologically, post-traumatic stress disorder may cause not only mental disorders but also systemic disorders ¹⁾. In large disaster, it may cause community relationship disorders ²⁾.

In this earthquake, aftershocks were experienced more than 10,000 times and caused significantly higher in those living in temporary housing at the time compared to those living in their own homes³⁾. Kario reviewed the recent evidence, possible mechanism and the management of "Disaster Hypertension" for effective prevention of disaster-induced cardiovascular events in 2012 ⁴⁾.

Ohira et al. reported that the blood pressure increased among residents, especially evacuees, in the evacuation zone of Fukushima prefecture after the Great East Japan Earthquake. Evacuation may be associated with an increased risk of hypertension among men in the 2 years after the disaster⁵⁾. Body weight and the proportion of overweight/obese people increased among residents, especially evacuees, in the evacuation zone of Fukushima prefecture after the Earthquake⁶⁾.

Regarding the basic data for residents aged 16 years or older who received a comprehensive health check examinations in 2011-2012, the number of residents who had lived in the evacuation zone with obesity, hyperlipidemia, hyperuricemia, liver dysfunction, hypertension, glucose metabolic abnormalities, or renal dysfunction increased with age in all age groups⁷⁾.

In our observation on data of welfare evacuation shelter, systolic and diastolic blood pressure (Fig.1 and 2), heart rate (Fig.3), body weight (Fig.4), data loss was remarkable, and notable prominent changes were not recognized. In other words, there is no increase in systolic and diastolic blood pressure expected by stress, and no increase in heart rate is also noticed. In body weight (Fig.4) and FIM(Fig.5), objective evaluation of ability to run daily life, there are no cases of deterioration, examples that are improving are also found.

The data should be educationally significant for nursing care and medical personnel who responded such a large-scale disaster. It was also a place for medical professionals to learn that the elderly people are aware of the high potential and that relationships that derive their potential are important. In addition, we realized that its potential will be drawn out by strengthening the connection with society as a result of attention and concern from others gathered in a well-balanced living environment.

As a lesson for the future, it should be said that lowering of bone density and muscle atrophy proceed on a daily basis, and joint contractures, which are secondary complications of long-term bed loggers, are completed within a month.

Although we could not grasp details such as the change in degree of care and the age classification before and after the disaster, it took 40 days from the occurrence of a disaster to open a welfare evacuation facility. In this disaster, the adequate time to prevent irreversible physical change was missed.

Even in July, the number of nursing care application in the city A amounted 1.5 times of the number in the year before the earthquake. Although it is possible that the injury or illness caused by the earthquake damage is considered, it is assumed that there was also the influence of the decreased activity decline due to the change of the living environment at the evacuation center, and the life-inactive illness was raised a problem. Furthermore, according to the survey conducted by the Reconstruction Agency, 90 % of earthquake disaster death is over 66 old year, 50% died within one month from the disaster. For the elderly who need assistance, a system that move to a place where relatively environmentally friendly as welfare evacuation shelter should be fundamental.

Conclusion

- 1) As a response to disasters in an aging society, collaboration between the medical field and health and welfare fields and utilization of regional inclusive care system
- 2) Designation of welfare evacuation shelters and pre-correspondence plan and preparation, public dissemination to residents and supporters
- 3) Early opening of welfare evacuation centers and early accommodation of the subjects

- 4) Improve the living environment not only the place designation as a welfare evacuation center but also the activity of elderly people does not decrease
- 5) Promote partnership between the elderly and supporters, establish self-care to the extent that self-reliance of the elderly is not inhibited or promoted.

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東日本大震災における慢性期に開設した福祉避難所の効果

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背景と目的: 東日本大震災は、2011年3月11日に発災し大規模な津波と福島原子力発電所の電源喪失による原子力災害を併発し、大規模かつ複雑な避難を要した。

対象と方法: 被災地A市において、発災後49日目に健常人と混在して避難所に収容されていた要介護者を対象として時期として「前例のない」福祉避難所を開設した。対象は、開設期間中に当該福祉避難所に入所した49名の要介護者（延べ2812人）において、通常の保健活動として測定した収縮期および拡張期血圧、心拍数、体重、FIMの入所時と入所後の経過を検討した。

結果: 全例において収縮期および拡張期血圧、心拍数、体重、FIMの悪化例はなく、臨床症状の悪化による転院事例や災害関連死を認めなかった。

考察: 2011年当時は福祉避難所は発災後1週間と開設期間が限定されていたが、広範な社会システムの損壊を伴う大規模災害においては、開設時期を限定せず、必要に応じて弾力的に開設し運営することが必要である。

キーワード: 東日本大震災、福祉避難所、収縮期血圧、拡張期血圧、心拍数、体重、FIM

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