



Uninterrupted medical care against disasters and pandemics

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Japan is known as an earthquake-ridden country, for the reason it locates on the place where the several plate bump into each other. The recent most terrific earthquake was the Great East Japan Earthquake (GEJE) which occurred in March 2011, triggered giant tsunami, caused extensive damage along Japan's northeastern coast. Hatanaka R et al. reported the risk of withdrawal from hypertension treatment (HTTx) of the GEJE victims [1], (https://www.data.jma.go.jp/cpdinfo/extreme/extreme_p.html, https://www.data.jma.go.jp/cpdinfo/temp/an_jpn.html). In Japan, annual amount of precipitation is gradually increasing because of global heating (2.3). Rate of torrential downpours leads to a fatal disasters is also increasing, which need evacuation. Natural catastrophe due to earthquake or climate change tends to be increasing, we should prepare for these critical situations. It is necessary to inform the importance or specific method of health administration under emergency circumstances broadly.

Under emergency circumstance such as GEJE, it takes much trouble for patient to continue medication treatment as usual. The deficiency of medicine due to paralyze of transportation network, and the loss of medication record in the confusion, result in inadequate medication even if medicine have supplied. After GEJE, amount of people was forced to stay long term at evacuation center. Withdrawal risks from HTTx was higher in coastal areas compared with inland areas, while the coastal area suffered from giant tsunami and amount of people needed to evacuate [1]. The

quality and quantity of food supplied at evacuation centers are nutritionally poor, such as sweets, pastries, canned stuff or cup noodles, which include overabundance of salt. Hoshide S et al. showed the association between the increased estimated sodium intake constituted a significant risk of hypertension based on the investigation evaluating sodium intake in evacuees in a shelter after GEJE. Also, these association were observed in the population without prevalent hypertension before the disaster [2]. Psychological distress is also the risk of withdrawal from HTTx, such as the stress staying at unaccustomed surroundings like evacuation center, and stressful condition continuation even if they can move to the temporary housing. Psychological aspect may underlie the increase of cardiovascular disease prevalence in coastal area after GEJE [3].

Difficulties of therapy continuation is not just limited to hypertension, such as diabetes, auto immune disease depend on steroid, or psychiatric disorder. Drug effect easily influenced by content of meal such as warfarin are also difficult to continue appropriate treatment. Notably, diabetes management is complicated because of the necessity such as self-monitoring of blood glucose (SMBG) under insulin self-injection, or drug cessation on uneatable day. In addition to the shortage of materials such as insulin syringe, needle, or glucometer, it is so tough to give attention to the procedure several times during a day properly, especially in the surroundings far from usual life. Diabetes patients are encouraged to have stockpile of insulin syringe and SMBG kits at least for one week in a drug pouch and should keep it easily accessible [4]. This is not just limited to diabetes, having stockpile medicine in preparation for emergency situation is recommended for all patients who are undergoing oral medication. Hypertension management are supposed to be influenced indirectly by cessation of the therapy for the other disease such as diabetes after GEJE.

Hatanaka R et al. also showed withdrawal risks from HTTx according to housing damage, whose relatively less damage shown significantly higher risk than whose more than half

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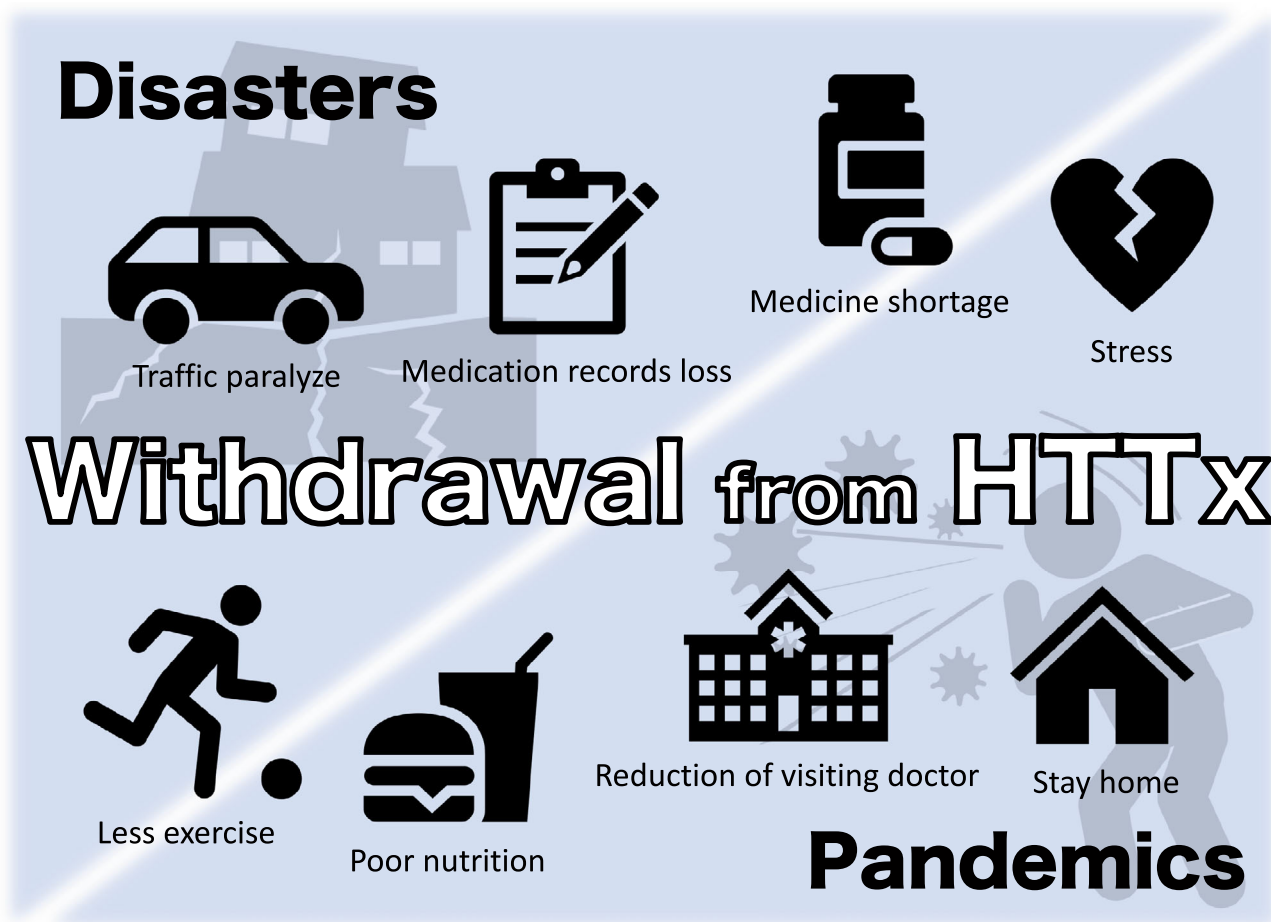


Fig. 1 Disasters (top half) and pandemics (bottom half) are major events that can disrupt continuity of medical care, including hypertension treatment (HTTx). We must be prepared for the next Great East Japan Earthquake (GEJE) and the next COVID-19 pandemic to establish appropriate social responses in the near future

destroyed [1]. In GEJE, public health nurse or volunteers visited to evacuation center all across the affected area (<https://www.mhlw.go.jp/stf/shingi/2r985200000231cm-att/2r98520000023cg8.pdf>), which helped to figure out evacuee's health condition and keep them healthier. On the other hand, people stayed in their own home because of relatively less damage housing, could not be able to receive the benefit. Furthermore, if supplies such as medicine, food, or daily commodities become insufficient, they have no way to obtain those stuffs. In addition to human resources or supplies described above, financial supports are as well important for disaster victims. Inadequate post-disaster administrative supports may lead to the result that less damaged housing patient showed the higher risks of withdrawal from HTTx Fig. 1.

We have mentioned about the difficulties of health administration under disaster, however, coronavirus disease-2019 (COVID-19) pandemic also have resulted in the worsening of health administration. During the pandemic, prevention from infection was the highest priority, therefore, people were urged to stay home as much as

possible except for non-essential outings which inevitably led to a major change in lifestyle. As a part of those behavior, many patients decreased the frequency of visiting doctors and delayed in examinations and diagnosis. The present writer as an internal medicine physician, realized consultation rate reduction of outpatients, and increment of telephone counseling or long-term prescription during the pandemic term for real. Also, worse of eating habits or decrease of exercise habits were brought by restriction from social activities such as shopping or attending hobby gatherings [5]. Refrain from visiting doctor and unhealthy lifestyle made health administration difficult, result in development of disaster hypertension, strongly associated with cardiovascular diseases (CVDs) [6]. In recent years, even before the COVID-19 pandemic, telemedicine operation was already started for patients who are difficult to visit doctor, because of living in secluded area or physically disabled. Restriction of daily behaviors under COVID-19 pandemic, telemedicine has dramatically generalized using digital device such as personal computer, tablet computer or

smartphone. Recently, number of applications are produced to record own health data, such as blood pressure, heart rate, body weight, percent body fat, body temperature and so on. Digital devices are now widespread, but still elder are less familiar with these devices. Usefulness of digital device should be demonstrated to elder population, and simultaneously, need to improve the devices or applications much easier to use. Using digital healthcare service include telemedicine or recording application are expected to change or maintain daily behavior healthy and prevent development or progression of lifestyle-related illness represented by hypertension [7]. The national guidelines have shown that home blood pressure monitoring in hypertension management has a high potential for improving the diagnosis of hypertension and be helpful for physician to select proper therapeutic agents which lead to the reduction of blood pressure, result in prediction of CVDs [5]. Under the circumstance of limited access to medical care, home blood pressure management is much more important. Post COVID-19 pandemic, dramatically changed lifestyle are widely recognized as “New Normal”, need to explore ways to strike a balance between prevention from infection and maintaining access to medical care to administrate healthier life [5].

For both natural disaster and infection pandemic, people are forced to live a life surrounded by the unaccustomed situation. Unable to maintain even daily activities, it is not hard to imagine that priority of taking care of own health will easily sink down. It is meaningful to inform widely that life under critical situation caused by disaster may worsen existing disease and may develop another lifestyle-related disease [5]. Explain the preparation for individuals at critical situation with concrete descriptions, having a stockpile medicine or medical supplies in prepare for the term impossible to visit doctor, keep the records of present medication or own health data in a conspicuous place to make it possible to bring them out in an emergency. Role as

a support side, not only administration support but also medical facilities such as hospitals and pharmacies may provide medical supply or information. In addition, under the situation of digital devices are widely used and telemedicine became common, it is important to keep good internet access in broad area even in disaster. To provide the supports immediately at the crisis situation, it is necessary to prepare for damage as a routine basis.

Compliance with ethical standards

Conflict of interest The author declares no competing interests.

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