

Disaster drill in TUH to accept an injured patient in radiological disaster (2015/9/25)

Topics: Drill in the Secondary Radiological Disaster Management Hospital
Venue: Tohoku University Hospital (Sendai)

On Sep. 25, 2015, Tohoku University Hospital (TUH) performed a disaster drill to accept an injured patient as the secondary radiological disaster management hospital. The secondary radiological disaster hospital are supposed to accept patients from radiological accidents who cannot be treated in the primary radiological disaster management hospitals. If the patient has severe internal contamination, the patient will be transferred to the tertiary radiological center, i.e. National Institute of Radiological Sciences in Eastern Japan and Hiroshima University in Western Japan.

The drill simulates the scenario that five workers in the Nuclear Power Plant (NPP) had fall accident and one of them is coming to TUH using helicopter. A call from the NPP was informed to TUH President, Head of Emergency Center, Radiological Disaster Supervisor (Prof. Hosoi) immediately, and the decision was made within 10 min to accept the patient and to establish the headquarter. A 45-year old man got injured by the accident resulting in the open fracture with radiological contamination in the right lower thigh. The general condition is stable and the whole body was decontaminated on site as much as possible except the injured thigh. The initial contamination was reported 100,000 cpm, and the decontamination reduced it to 45,000 cpm.

The headquarter was set up within 25 min and the curing of the ER (coverage of floor, wall and the equipment of the ER with polyethylene coated paper) was started. The corrido and elevator from the heliport to ER were also cured. The curing process was finished within 30 min when the patient has arrived by the helicopter. The patient had been wrapped on site by the protection sheet to reduce the proliferation of contamination and was moved onto the stretcher. He was transported to the designated Radiation Controlled Area (RCA) in ER. The Treatment Area (TA) is further restricted area in the RCA. Only the staff covered with whole body PPE is allowed to enter the TA. Other staff will help the staff in TA to avoid the proliferation of contamination. The staff inside of TA cannot leave the area until all PPE and removed and the confirmation of contamination-free. The treatment staff checked the general condition of the patient, measuring and sampling of the contamination and started the decontamination of the wound and treatment. Contaminated materials are regarded as radiological wastes and managed strictly according to the law. Treatment staff consisted of one doctor, two nurses and one radiological technician doing each tasks carefully avoiding proliferation of contamination.

Headquarter is located another building from ER, to get the information from NPP and ER, contacting with related organizations, university office, and local government, controlling other in-hospital patients and media. It was not easy to capture the situation in ER. Disaster drill clarifies the gaps between the realities.

In the Great East Japan Earthquake, several problems emerged after the NPP accident. For example, small number of doctors escaped from hospital leaving patients behind due to the fear from radiation, acceptance of contaminated patients may paralyze the function of the hospital, and may cause anxiety of other patients.

According to the lessons learnt, the Nuclear Regulatory Agency, Ministry of Education, Culture, Sports, Science and Technology (MEXT) and Ministry of Health, Labour and Welfare (MHLW) are reorganizing the radiation disaster medical management system. The primary facility will be “Collaborative Institution for Radiological Disaster”, the secondary facility will be “Radiation Disaster Base Hospital”, and the tertiary facility will be “Advanced Radiation Disaster Medicine Support Center” (temporal naming). According to the future possibility of NBC terrorism, restarting other NPP and abolition of Fukushima NPP, the needs for TUH to accept contaminated patients will not end. TUH plays a crucial role as the “Radiation Disaster Base Hospital” and the center for education and training of general health providers to cope with the radiological disaster together with the Radiation Emergency Medicine Promotion Center in IRIDeS.



Prof. Yoshio Hosoi orienting the headquarter staffs about Radiation Emergency Medicine



Acceptance and the establishment of headquarter was declared within 10 min from first call, and the HQ was set up within 25 min.



Cuing of the corrido to ER.



Curing of Radiation Controlled Area (RCA) in ER



A simulated patient was moved onto the stretcher from the helicopter.



Within the ECA, the treatment area (TA) is managed by the whole body protected staffs. Treatment is carried out with caution to avoid proliferation of contamination.



Surveillance of the contamination of TA staffs after the treatment.



Debriefing of the drill by all participants.

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