

Background

Although the use of radioactive materials provide us a wide range of benefits in medicine, industry, and related research, it alarms us that we have worldwide radiation accidents. Though a radiation accident in the nuclear power plants (NPP) is very rare, it can lead to a wide range of health problems to the public if happens. Thus, we need to be equipped with infrastructure and functional requirements in case of radiation emergency in nuclear power plants.

Objective

In this article, the recent development in KHNP is introduced in terms of the medical preparedness for radiation emergency in nuclear power plants, focusing on the role of Radiation Health Research Institute.

Role of Radiation Health Research Institute in case of NPPs' accident

RHRI is the research institute affiliated in KHNP, and which was established to prepare the radiation emergency medical system for the NPP accidents and to study the health effects of radiation exposure in 1996. So far RHRI has made efforts in establishing radiation emergency medical preparedness system for NPP's emergency, construction of radiation dose evaluation system for radiation accident victims, studying effects of low dose radiation on cell, animals and person, constructing the inclusive and integrated health management program for NPP workers, and studying the evaluation on the long term human effect of radiation via the epidemiological study.

For the NPP's emergency, RHRI has taken a leading role in increasing the radiation emergency medical preparedness of nuclear power plants. Medical supports are comprised of radiation emergency equipments, special medical teams and collaborating hospitals. Related activities include providing education/ training for emergency personnel, culturing special radiation emergency medical teams, and operating 24 hours on call system. Workers in Nuclear power plants, medical personnel, 119 rescue team members are obliged to attend to training sessions providing effective steps and responses on radiation emergency. Specific protocols for triage, treatment, transfer, decontamination and dose evaluation for radiation irradiated victims have been developed.

After Fukushima accident in 2011, the primary medical support in NPP site was highlighted as a essential factor. From this lesson, RHRI is preparing to build Radiation Emergency Medical Center(REMC) at every NPP site, which will function a key emergency facility during NPP's emergency. it is composed of over 6 medical personnel, essential medical facility and equipments. This center performs emergency medical treatment and intensive health management for emergency workers during emergency. In addition to REMC, RHRI is studying to set up radiation dose evaluation system for large scaled accident like in-vivo ESR, mobile WBC and genomic biodosimetry. With this efforts, RHRI also have developed lifetime risk estimation program for emergency workers based on their radiation dose. With this program, the lifetime cancer incidence risk can be calculated for emergency workers.

Conclusions

After Fukushima accident in 2011, the preventive measures for NPPs' emergency have much progressed in Korea. And in this article commented on the direction of the medical improvement

for NPPs' emergency. It includes primary emergency medical system, radiation dose evaluation system and lifetime risk estimation program. These improvements will effectively protect NPP workers in the case of NPPs' emergency.