representatives of the above ten organizations and institutions and two other experts. In order to assist the Board of Directors, there is the Board of Executive Secretaries each of whom is the person nominated by each of the above ten organizations and institutions. In addition, six councilors participate in the HICARE Council. They are the representatives of relevant ministries and other associations and will express their views as requested by the Board of Directors.

4 Activities

(1) Training of Medical and Other Technical Personnel

HICARE accepts for training physicians and other relevant technical workers who are involved in the medical care of the radiation-exposed people in the various parts of the world.

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RADIATION-EPIEMIOLOGICAL ANALYSIS OF INCIDENCE OF CANCER AND NON-CANCER DISEASES AMONG THE CHERNOBYL EMERGENCY WORKERS

Ivanov V, Tsyb A, Marchenko T*, Gorski A, Chekin S, Maksioutov M, Petrov A

Medical Radiological Research Center, Russian Academy of Medical Sciences, Obninsk, Russia

*EMERCOM, Moscow, Russia

In 1986 the USSR Ministry of Health Care initiated a program to establish the All-Union Distributed Registry (UDR) of persons exposed to radiation due to the Chernobyl accident. The computer center of Research Institute of Medical Radiology, which is part of the Academy of Medical Sciences (AMS), which is located in the town of Obninsk in the Kaluga oblast, became the core of the Registry. The UDR was formed with contributions from all republics of the former Soviet Union, and from various scientific research institutions and organizations. Information was mainly supplied to the UDR by republican information computer centers of the Ministries of Health Care of Belarus, and the Russian Federation and Ukraine.

In 1992 after the disintegration of USSR, and on the basis of the UDR, the Russian National Medical and Dosimetric Registry (RNMDR) was set up in the Medical Radiological Research Center (MRRC) of the Russian Academy of Medical Sciences (RAMS) (former Research Institute of Medical Radiology). The principal objective of the Registry was the organization of long-term automated individual records of persons exposed to radiation due to the Chernobyl accident, and also their children and subsequent generations, as well as the assessment of their health status.

As of January 1, 2005, the Russian National Medical and Dosimetric Registry contained individual medical and dosimetric data for 614,887 persons, including 186,395 emergency workers and 367,850 residents of four contaminated oblasts of Russia (Bryansk, Kaluga, Oryol and Tula).

Estimation of radiation risks of solid cancer for emergency workers. The analysis is based on data from the cohort of male emergency workers from 6 regions in Russia including 557,18 persons with documented external radiation doses in the range 0.001-0.3 Gy who worked within the 30-km zone in 1986-1987. The mean age at exposure for these persons was 34.8 years and the mean external radiation dose 0.13 Gy. In the cohort 1,370 cases of solid cancer were diagnosed and 3 follow-up periods were considered: 1991-1995, 1996-2001 and 1991-2001. The second follow-up period was chosen to allow for a minimum latency period of 10 years being characteristic of solid cancers. The values of excess relative risk per unit dose (ERR/Gy) for solid malignant neoplasms have been estimated to be 0.33.
Assessment of radiation risks of leukemia. The conducted epidemiological analysis covers a cohort of emergency workers living in the European part of Russia (71870 persons) for whom personalized data were available on external radiation doses (the mean dose 107 mGy). The considered follow-up periods include 1986-1996 and 1997-2003. If only two groups of emergency workers are compared: those with the external radiation dose below 150 mGy and with the dose higher than 150 mGy, it can be seen that during the first ten years leukemia incidence rate was 2.2 times higher in the second group than in the first one. At the same time, no differences were detected in the leukemia incidence rates for these groups during the second follow-up period (1997-2003).

There are two main conclusions to be drawn from the above: first, only emergency workers who received a radiation dose more than 150 mGy should be attributed to the risk group, and secondly, the risk of radiation-induced leukemias occurred during the first ten years after the Chernobyl accident.

Radiation-epidemiological analysis of cerebrovascular diseases in emergency workers. Special consideration is given to cerebrovascular diseases in the cohort of 29003 emergency workers who arrived to the 30-km Chernobyl zone during the first year after the accident. The statistically significant heterogeneity of the dose risk of cerebrovascular diseases is shown as a function of duration of staying in the 30-km zone. ERR/Gy = 0.89 (95% CI 0.42, 1.35) for the duration less than 6 weeks and ERR/Gy = 0.39 (95% CI 0.01, 0.77) in average. The risk group with respect to cerebrovascular diseases are those who received external radiation doses more than 150 mGy in less than 6 weeks (RR = 1.18, (95% CI 1.00, 1.40)). For doses above 150 mGy the statistically significant risk of cerebrovascular diseases as a function of averaged dose rate (mean daily dose) was observed ERR per 100 mGy/day = 2.17 (95% CI 0.64, 3.69). The duration of staying in the 30-km zone itself, regardless of the dose factor, influenced the cerebrovascular disease morbidity very small ERR per week = 0.002 (95% CI 0.004, 0.001).

Molecular genetic alterations in radiation-associated acute myeloid leukemia following the Chernobyl accident.


Research Centre for Radiation Medicine, Kyiv, Ukraine

Institute of Pathology and Institute of Molecular Biology, National Research Center for Environment and Health, Neuherberg, Germany

Background. A large body of epidemiological evidences has established the leukemogenic potential of ionizing radiation. However, little is known about the molecular mechanisms by which radiation induces the leukemia. Our data demonstrated that in spite of similar therapy acute myeloid leukemia (AML) patients exposed to ionizing radiation due to the Chernobyl accident had shorter overall survival compared to spontaneous AML cases. Exposed patients had lower complete remission rate and more often were resistant to chemotherapy.

The aim of the study was to analyze whether radiation-associated AML developed in clean-up workers at the Chernobyl NPP and inhabitants of Ukrainian territories with high contamination from radionuclide fallout differed from spontaneous AML in terms of molecular genetic alterations.

Methods. The cohort of patients in the study consisted of 152 unselected adult AML...