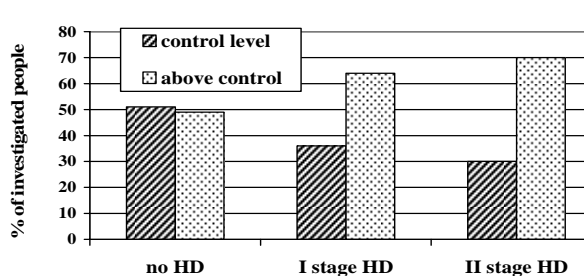


CHROMOSOMAL ABERRATIONS AND THE SICKNESS RATE IN CHERNOBYL CLEAN-UP WORKERS MANY YEARS AFTER THE ACCIDENT

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We have been performing cytogenetic and clinical investigations of Chernobyl clean-up workers (CL) for a long period of time. Unfortunately, almost all investigated CL did not go through biological dosimetry at the time of the accident. The physical dosimetry data are also incomplete or at times misleading. Thus, taking into consideration the lack of radiation sickness, the CL investigated in our Center are regarded as low-dose irradiated people. Our data and the data of other authors revealed that the rate of different types of chromosomal aberrations exceed the control level even a long time after initial irradiation [1]. The role and the significance of chromosomal aberrations in the pathogenesis of different somatic diseases are still unknown. The documents of IAEA 2005 International Conference paid special attention to the interrelation between the cytogenetic disturbances and somatic diseases in irradiated people [2].

We investigated the interrelation between chromosomal aberrations and diseases in CL. The health status data of 212 CL were taken from the Medical Register of EMERCOM of Russia. The total number of diagnoses of these persons is 3314. A relationship between the rate of chromosomal aberrations and two types of diseases: cancer and hypertension was found. The rate of chromosomal aberrations in CL who suffered from different types of cancer (n=14) was significantly higher (4.16 ± 0.58), than in CL without cancer (2.97 ± 0.13), $p < 0.05$. This was understandable because the relationship between genetic disturbances and cancer is well known. We discovered a correlation between the stages of hypertensive disease (HD) (from 0 to 2) and the rate of chromosomal aberrations ($r = 0.20$, $p < 0.01$). The number of CL with a rate of chromosomal aberrations above the control level (calculated in a group of



68 non CL the rate of chromosomal aberrations was 1.96 ± 0.21) was significantly higher in CL, who suffered from hypertensive diseases, and increased according to the severity of illness ($p < 0.05$): (Fig). It is difficult to explain how the rate of chromosomal aberrations and hypertensive disease in CL are related. It is possible to hypothesize that the disturbances in oxidative stress, which take place in CL, play a key role in both phenomena.

The lack of Biodosimetry data at the time of the accident raises uncertainties when attempting to understand the role of low-dose irradiation in the appearance of chromosomal aberrations and somatic illness in CL a long time after initial irradiation.

References:

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2. Chernobyl - Looking Back to Go Forwards. International Conference: Chernobyl - Looking Back to Go Forwards Towards a United Nations Consensus on the Effects of the Accident and the Future, Vienna, 6-7 September, 2005