



LEUKEMIAS AND LYMPHOMAS IN UKRAINE POPULATION EXPOSED TO CHRONIC LOW DOSE IRRADIATION

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ABSTRACT. Data about 951 cases of leukaemias and lymphomas appeared at pre- and postaccident period among adult and children population of Kiev and Zhitomir oblasts (regions) is represented in the paper totally for period of 1980-1996. Assessment of cases of diseases has been conducted among inhabitants of controlled areas in oblasts mentioned above with soil contamination with Cs-134 within 1-15 Ci/sq.km and above. Efficient irradiation dose of leukaemia patients deviated within 0.15-15.0 cSv. For period mentioned above analysis of data obtained did not reveal any excessive cases of leukaemia and lymphomas among children and adults residing on territories of radiological control in Kiev and Zhitomir oblasts, and they are similar. Meanwhile, we should point out change in pathomorphosis of the disease with excess of cases of leukaemia with unfavourable course.

The Chernobyl accident caused number of problems. The most actual among them are issues of assessment of instant and delayed radiobiological effects. Human haemopoietic and lymphoid systems are the most radiosensitive and represent particular indicator of severity of affection of human organism by ionizing irradiation. Preliminary studies have shown that risk of development of acute leukaemia appears mostly at individuals having received high dose loadings (above 100 cSv). Meanwhile, there is some data available about excess of frequency of separate types of leukaemia under influence of ionizing irradiation in doses of up to 50 cSv. Nowadays direct dependence has been proven for development of chronic and acute myeloid leukemia from bone marrow dose. Basic modifying factors have been explained. Data about leukaemia and lymphomas morbidity of population of Zhitomir and Kiev oblasts is represented in the paper totally for period of 1980-1996 and also cases of leukaemia at inhabitants of contaminated areas in these oblasts, where levels of soil contamination with Cs-134 and Cs-137 deviated within 1-15 Ci/sq.km and more. Efficient irradiation dose for leukaemia patients was within 0.15-15.0 cSv. Sex and age indices, structure of leukaemia before and after the Chernobyl NPP accident were estimated. Verification of leukaemia and lymphomas was conducted in haematological and oncological hospital units in appropriate oblasts and the Institutes for Clinical Radiology, Haematology and Oncology. Diagnostics of diseases was based on assessment of clinical symptomatics, investigation of periphery blood, bone marrow with subsequent morphological, cytochemical and immunological identification of blast elements. Data was obtained about 951 cases of leukaemia and lymphomas at population of Kiev and Zhitomir oblasts totally for 1980-1996. At adult population at preaccident period of 1980-1985 (number of population was 2 905 800) 147 cases of leukaemia and lymphomas were revealed: acute myeloleukemia consisted 29.4%; chronic myeloleukemia - 3.4%; chronic lympholeukemia - 25.8%; myeloma - 8.8%; malignant lymphomas - 32.6%. For period of 1992-1996 at the same oblasts (number of population is 2 721 300) 294 cases of leukaemia and lymphomas were revealed: acute leukemia - 23.8%; chronic myeloleukemia - 5.2%; chronic lympholeukemia - 27.8%; myeloma - 9.6%; osteomyelofibrosis - 1.3%; polycytemia - 0.7%; malignant lymphomas - 31.6%. On territories of Kiev oblast contaminated with radionuclides for period of 1992-1996 from number of cases revealed acute leukemia was 25%; chronic myeloleukemia - 2.5%; malignant lymphoma - 40%; polycytemia - 2.5%; osteomyelofibrosis - 2.5%. In similar areas of Zhitomir oblast for period of 1992-1996 acute leukemia was 28.2%; chronic myeloleukemia - 5.9%; chronic lympholeukemia - 20%; osteomyelofibrosis - 4.7%; myeloma - 1.2%. Data obtained testify about excess of number of

malignant lymphomas. It should be pointed out that all the cases of chronic myeloleukemia and majority of malignant lymphomas were revealed at inhabitants of Ivankov raion (district) of Kiev oblast. During period of 1980-1996 on territory of Kiev oblast among children's population 289 cases of malignant diseases of blood system were verified (number of children's population is 435 000). Among children there were 47% of boys, 53% - girls. Different versions of acute lymphoblast leukemia (L1-L3) were established at 83%, myeloblast - 10%; lymphoma - 7% of children. Frequency of diagnostics of leukemiae among children of different age groups was practically similar: children, age below 3, consisted 32.6%, age 3-7 - 31.3%, at individuals of senior age - 36.1%. On territories of Zhitomir oblast for the same period (1980-1996) 187 children with leukemiae and lymphomas were revealed (number of children's population is 349 000). Distribution of patients taking into account sex, age and version of a disease was similar to Kiev oblast. Analysis of morbidity in Kiev and Zhitomir oblasts conducted for 5-years period before the accident and at subsequent first and second five years has not shown excess of number of leukemiae and lymphomas among children at first five postaccident years. Excessive cases of leukemiae were not revealed among children residing on territories contaminated with radionuclides in Kiev and Zhitomir oblasts for period of 1980-1996. Assessment of cases of leukemiae morbidity among children taking into account their age and sex peculiarities, versions of leukemiae and criteria of prognosis conducted in two intervals of 1976-1985 and 1986-1996 by method of interval assessment has shown that number of patients with standard risk group decreased and fraction of children with high risk group exceeded on account of girls, age 10-14. Analysis of data obtained testifies that nowadays among children and adults residing on territories of radioecological control in Kiev and Zhitomir oblasts excessive cases of leukemiae and lymphomas were not revealed. However, change of pathomorphosis of the disease takes place with tendency of excess of versions with unfavourable course.