Clinico-electroencephalogical study of the participants in the liquidation of the consequences of the accident at the Chernobyl nuclear power station, exposed to low doses of radiation.

M.V. Kuleshova, F.S. Torubarov, S.N. Luqianova
State Research Center of Russian Federation – Institute of Biophysics, Moscow, Russian Federation

225 persons were studied among them: 141 participants in the liquidation of the consequences of the accident at the Chernobyl nuclear power station, exposed to ionising radiation in doses until 50 Ber and 84 persons (age 30-50) from the comparison group, who were not exposed to ionizing radiation.

Correlation between neurological disorders and time of work in CNPS (Chernobyl nuclear power station) IV-V 1986, 1987, 1988 years and doses of radiation (3,1±0,6 ber and 19,1±2,2 ber) was not carried out.

Functional neurological disorders were determined in 83,9% cases (141 participants in the liquidation of the consequences of the accident at the CNPS), who were exposed to low doses of radiation. Neurological disorders of the participants who were exposed to low doses of radiation represent symptomcomplex of the vegetative disfunctions (17,7%) with the developing dystonia neurocirculatoris, encefalopatia discirculatoris of different ethyology, among them: 10,5% encefalopatia discirculatoris connected with cervical osteochondrosis, unco-vertebralis artrosis, extravascularis compression arteria vertebralis 4,2% encefalopatia discirculatoris connected with arterial hypertension and 1,4% encefalopatia discirculatoris connected with atherosclerosis of arteria basilaris and arterial hypertension. Frequency and expression of all these symptoms for sure higher than in comparison group (vegetative disfunctions-8,3%; dystonia neurocirculatorical-24,9%; encefalopatia discirculatorical-6,4%).

Psycho-emotional disorders were revealed in 61,7% participants in the liquidation of the consequences of the accident at the CNPS and in 29,7% in comparison group. Somatic pathology was revealed in 73% participants in the liquidation of the consequences of the accident at the CNPS and 34,2% comparison group. It is the evidence that psycho-emotional overexertion plays important role at persons, who are exposed to ionizing radiation, and may be mutually influenced of psycho-emotional and somatic disorders.

Changes of all parameters of EEG spatial and time organization were registered at neurological disorders, revealed from the participants in the liquidation of the consequences of the accident at the CNPS, exposed to low doses of radiation. According to spectro-correlation analysis, for sure higher number of reconstructions was revealed from the participants exposed to low doses of radiation (100%) relatively to comparison group (40,5%).

Participants in the liquidation of the consequences of the accident at the CNPS relatively to comparison group revealed for sure absence of differences in EEG spectrum between vegetative disfunctions, dystonia neurocirculatoris and encefalopatia discirculatoris on the backgroud of more intensive charges in EEG range.

For sure predominance of the neurological disorders was revealed in persons of the 40-50 years old.

Connection between neurological syndroms and osteochondrosis was established at 50% participants in the liquidation of the consequences of the accident at the CNPS.