

The Continuous Observation by Chromosome Aberration Elimination at Irradiated Persons

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One from a problem of biological dosimetry is the dose evaluation in remote time after irradiation. This takes place in certain percent of cases of acute irradiation, for ex-ample, when patient entrance in hospital is delayed. The retrospective dose evaluation is necessary for confirmation of irradiation fact and determination of quantity of possible absorbed dose in aims of medical social examination and potential judicial trials which are associated with requirements of a compensation of damage caused by health. There-fore the investigation of chromosome aberration rate dynamics of patients injured in a result of Chernobyl accident is very important. In this situation the fact of presence of primary cytogenetic analysis results of peripheral blood lymphocyte cultures established in nearest days and weeks after irradiation for many number of injured patients is especially essential. It allows to make the comparison between primary and repeated investigations. Chernobyl patients (73 humans investigated in during 12 years after irradiation) were divided by three groups depending on primarily evaluated dose by medium dicentric frequency: patients irradiated by 0,2-2,4 Gy (30 individuals, 90 cultures); patients irradiated by 2,6-4,4 Gy (28 individuals, 117 cultures) and patients irradiated by 4,6-9,8 Gy (15 individuals, 64 cultures). The cytogenetic analysis was produced by FPG-method. Also the cytogenetic data of nearest time after irradiation testified to relatively uniform irradiation of basic body mass for almost all injured patients. We used double exponential model how in the article IAEA (1998) for Goiania patients for the mathematical description of elimination of dicentrics and unstable chromosome aberrations. A speed of decrease of frequency of dicentrics in cells with dicentrics in middle was more than for frequencies of dicentrics and unstable aberrations by 100 analyzed cells. In all cases the elimination speeds of cytogenetic indexes of unstable aberrations was the more the more primary absorbed dose. High individual variability of this process was observed. Qdr index which is often proposed for retrospective dose indication submitted these principles also. The middle speed of its decrease was less than for frequencies of dicentrics and unstable aberrations by 100 analyzed cells but more than for frequency of dicentrics in cells with dicentrics. As against dicentrics and other unstable aberrations atypical chromosomes frequency in whole was approximately constant in during 12 years of observation in spite of high individual variability. However in late period atypical chromosomes were contained mainly in stable cells but not unstable cells.