

- 75 Identification of clonal chromosome aberrations by repeated lymphocyte tests in A-bomb survivors.

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Clonal chromosome aberrations were identified by repeated lymphocyte tests (average 4 times) using G-banding method in 16 A-bomb survivors whose aberrant cell frequency varied from 4 to 72%. Among 12680 cells examined, 5035 cells with stable aberration(s) were identified. There were 36 type I clones consisting of 3 or more cells with identical aberration(s) in any one blood sample, 173 type II clones that appeared repeatedly in different blood samples, and 81 type III clones that are similar to type II but a fraction of clonal cells bear an additional aberration. The origin of type III clones is probably in bone marrow stem cells at S phase. In those cells, both chromosome-type and chromatid-type aberrations may well be induced within a cell, giving rise to a clonal cell population bearing one aberration common to 100% of the population and another common to 50% of the population.

To understand the lymphocyte kinetics in human, it is crucial to determine the origin of such clones.

- 76 Relationships between low dose A-bomb radiation and examination results

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The relationships between low dose A-bomb radiation (less than 30 cGy) and examination results were investigated. The coefficients of variation of health checks for individuals were calculated for erythrocyte counts, logarithmic value of leukocyte counts, hemoglobin, systolic blood pressure and diastolic blood pressure. The coefficients of variation for each health check item indicates the amount of fluctuation of the results. The U-shaped dose-response relationships were observed on erythrocyte counts and systolic blood pressure in male, however those were not observed on other items and in female.

- 77 Arteriosclerosis in A-bomb Survivors - Analysis of Pulse Wave Velocity

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A longitudinal cardiovascular research in the Department of Clinical Studies, RERF suggested a positive association between incidence of myocardial infarction, stroke and A-bomb exposure in Hiroshima, and that the relative risk (vs. 0 Gy) of mortality from cardiovascular disease and the prevalence of vascular disease were higher in the high dose group compared to the other groups. In order to analyze the relationship between A-bomb exposure and arteriosclerosis we adopted a new device for the measurement of Pulse wave velocity (PWV) by which the compliance of the aorta could be measured this time. [Subjects and Methods] The study subjects were selected the Adult Health Study subjects (n=655) in Hiroshima whose DS86 doses were available from April 1992 to November 1993. The principle of PWV measurement rests on the fact that the lower the compliance of the vascular wall due to arteriosclerosis, the faster the transmission of pulse wave in the vascular system. The machine we used was PWV-200 Fukuda Corporation. We defined the PWV of more than 9.0 m/sec as abnormal. [Results] Study sample size, measured PWV completely was 536. (Male: n=192, 58±9.6 ys, Female: n=344, 58±10 ys) And 201 subjects were classified into an abnormal PWV group and 335 into a normal group. Between the two groups, there were differences in age, and also in dose. Furthermore adjustments were made for other ischemic heart disease risk factors, age, systolic blood pressure and body mass index significantly correlated with PWV abnormality, but dose correlated moderately. [Conclusion] The result suggested that the development of aortic arteriosclerosis detected by PWV was associated with A-bomb exposure. However, the direct effect of A-bomb radiation appeared to be no so strong.