

- 6 Acute Radiation Injuries and Hematological Parameters Measured 25 Years After the Bombing in Atomic Bomb Survivors  
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As a part of the study on the relationship of the natural history of disease with the acute radiation injuries among atomic bomb survivors, we compared hematological parameters measured 25 years after the bombing between atomic bomb survivors with and without acute radiation injury. Out of 14,355 atomic bomb survivors with information on acute radiation injury, 11,167 had undergone health examinations in 1970–1974 and we compared their hematological parameters then measured between those with and without acute radiation injury. The results are as follows: (1) in males, the erythrocyte count, the leukocyte count and hemoglobin level showed a tendency to decrease with age, while in females, such a tendency was observed only for leukocyte count; (2) no significant difference was observed in the levels of erythrocyte count, leukocyte count and hemoglobin between survivors with and without acute radiation injury; and (3) the frequency of leukocytopenia was 0.3% and 0.1% in survivors who had and had not acute radiation injury, respectively.

- 7 Atherosclerosis-Related Microbial Infection in Atomic Bomb Survivors  
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It has been demonstrated that non-malignant diseases including atherosclerotic diseases are increased in Atomic-bomb (A-bomb) survivors in radiation dose-dependent manner. However, the mechanism for such increase in non-malignant diseases in the survivors has not been elucidated. Recently, many reports have suggested that infection with Chlamydia pneumoniae, Helicobacter pylori, or cytomegalovirus is associated with atherosclerotic process. We examined the infectious states of these microorganism by measuring the specific antibody levels in A-bomb survivors to investigate the mechanism for the development of non-malignant diseases in the survivors. Measurements were done on 1,247 survivors (average age: 71.4 y, 387 men, 869 women). The levels of both IgG and IgA antibodies to Chlamydia pneumoniae significantly decreased with DS86 radiation dose (IgG: -17.3% / Gy, IgA: -9.1% / Gy). There was no significant association between antibody levels to Helicobacter pylori or cytomegalovirus and radiation dose. Generally, decreased antibody levels to specific microorganism relate to decreased infectious events or to decreased immune response to the microorganism. Mechanism for the decreased antibody levels to Chlamydia pneumoniae with radiation dose will be discussed in relation to the data of other markers in the survivors.

- 8 Measurement of Dose Distribution in Mouth for gamma-ray External Exposure  
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ESR method using the tooth enamel is recently adapted for the measurement of personal radiation dose. It is effective method for the personal dose estimation because the measured sample is a direct material obtained from the person himself. Information of dose distribution around the teeth in mouth is one of the most important items in ESR method, especially for the external exposure, because the distribution would make a large estimation error of effective dose for the person. The presented study measured the dose distribution around teeth with TLD (UD110S). In the study, a phantom based on a real bone of adult woman was used. The energy of gamma ray is 662keV (Cs-137) and irradiation angle to the phantom face is varied at 0, 45, 90, 135, 180 and 270 degree. From these irradiation experiments, it is concluded that the maximum variation around whole teeth is 30–40%. This result shows that some correction techniques should be developed to estimate the effective dose using ESR method with the tooth enamel.