

Medical radiation exposure among atomic bomb survivors: understanding its impact on risk estimates of atomic bomb radiation

RERF conducts studies of health effects from radiation among atomic bomb survivors. There are concerns that radiation exposure in the diagnosis and treatment of disease (in other words, “medical exposure”) might reduce accuracy in analysis of risk estimates of atomic bomb radiation. As part of its Life Span Study,^{*1} RERF conducted a mail survey^{*2} during 2008-2011 concerning medical radiation exposure, given that medical irradiation is expected to increase among survivors due to recent advances in medical care and increased incidence of age-related illness.

Around 90% of the participants had experienced some medical irradiation, with most exposures comprising CT scans and gastrointestinal fluoroscopy. This analysis found that those exposed to lower atomic bomb radiation doses (any dose lower than 1.0 gray of radiation [Gy]), regardless of the dose, had experienced medical exposures at roughly the same frequency. Conversely, in those exposed to high atomic bomb radiation doses (1.0 Gy or greater), the frequency of medical exposures was higher than that in the low atomic bomb radiation exposure group. The reason for this was that people exposed to high atomic bomb radiation doses had increased cancer and other disease incidence and thus had increased opportunity to undergo medical irradiation for diagnosis and treatment. Nevertheless, when atomic bomb radiation dose was high, the medical exposure dose, naturally, was relatively low by comparison. This analysis therefore concluded that risk estimates of atomic bomb radiation were likely little affected by medical irradiation.

^{*1} Life Span Study:

The main purpose is to investigate the long-term effects of atomic bomb radiation on the cause of death and cancer incidence. At the time of the 1950 national population census in Japan, about 94,000 atomic bomb survivors were selected from among those who were confirmed to be in Hiroshima and/or Nagasaki at the time of the atomic bombings and about 27,000 who were not in city at the time. This study has tracked about 120,000 subjects.

^{*2} Mail Survey:

For those who participate in the Life Span Study, RERF first conducted an interview survey about their exposure conditions and subsequently received their cooperation in questionnaires conducted by mail. This series of mail surveys provides data on lifestyle habits and is used to more accurately investigate the health effects of atomic bomb radiation.

RERF's objective with this brief outline is to succinctly explain our research for the lay public. Much of the technical content of the original paper has been omitted. For further details about the study, please refer to the full paper published by the journal.