

Radiation and risk of liver, biliary tract, and pancreatic cancers among atomic bomb survivors in Hiroshima and Nagasaki: 1958–2009

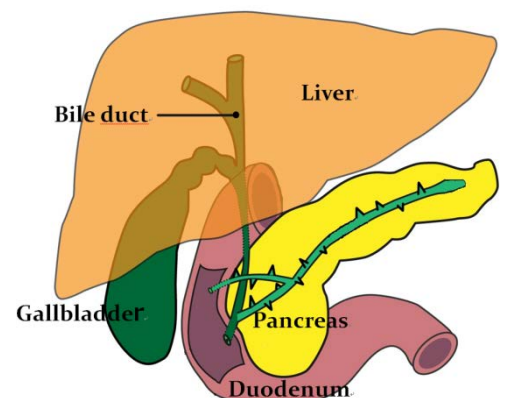
RERF's Life Span Study* (LSS) has shown that exposure to atomic bomb radiation increases the risk of developing liver cancer. Based on the latest of a series of LSS studies, radiation risks of liver, biliary tract, and pancreatic cancers were reported for the period 1958–2009. Alcohol consumption and smoking were also taken into account, since they are known to increase liver cancer risk and might also affect radiation risk estimates.

The study participants were comprised of 105,444 people with known exposure doses from the A-bombings and who had no history of cancer at the start of follow-up. Outcomes studied were cancers of the liver (including intrahepatic bile ducts, which are a network of small tubes that carry bile inside the liver), biliary tract (gallbladder and extrahepatic bile ducts, small tubes carrying bile outside the liver), and pancreas.

During the study period, 2,016 cases of liver cancer were identified, with the risk of liver cancer increasing in proportion to A-bomb radiation dose. By age, the risk of liver cancer due to radiation exposure increased in those who were 0–9, 10–19, and 20–29 years at the time of radiation exposure, but the risk did not increase in those 30 years or older. Smoking and drinking each increased the risk of liver cancer, but had no effect on radiation risk estimates. Although 694 cases of biliary tract cancer were identified, as reported in previous Life Span Study (LSS) results, no relationship was observed between radiation exposure and the risk of biliary cancer. In total 723 cases of pancreatic cancer were identified. Based on our analysis, the risk of radiation-induced pancreatic cancer might have increased in women but not in men.

* 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.



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.