

Association of human T-cell leukemia virus type 1¹ with prevalent rheumatoid arthritis² among atomic bomb survivors—A cross-sectional study³

Few papers to date have reported any association between human T-cell leukemia virus (HTLV-1) and rheumatoid arthritis (RA). In this study, based on the latest statistical methods, RERF scientists measured HTLV-1 antibodies⁴ in Nagasaki A-bomb survivors to analyze whether HTLV-1 was associated with RA, and whether radiation exposure was associated with HTLV-1 and prevalence of RA.

As a result, 2,091 participants of health examinations in Nagasaki RERF's Adult Health Study (AHS)⁵ were selected for analysis, with 10.3% of that number testing positive for the presence of HTLV-1 antibodies. A clearly higher positive rate, 13.1%, was found in females than in males, at 5.8%. Of those analyzed, 1.1% were diagnosed with RA. The HTLV-1 antibody positive rate for those with RA was 23.7%, and the rate for those without RA was 10.1%. Those with RA had a statistically higher HTLV-1 antibody positive rate, even after adjustment for age, gender, and hepatitis C virus infection.

In conclusion, this cross-sectional study of an A-bomb survivor population suggested that many participants testing positive for HTLV-1 antibodies had RA. However, radiation exposure was not associated with either HTLV-1 antibody positive rate or RA.

Notes

¹Human T-cell leukemia virus (HTLV-1):

A virus that infects T-lymphocytes, one kind of white blood cell, and can infrequently cause leukemia. The virus is known to be widespread in Nagasaki prefecture.

²Rheumatoid arthritis (RA):

A chronic disease that arises when one's own immune system causes chronic inflammation in joints throughout the body. Recent progress in treatments for managing inflammation in the early phase of the disorder has led to increased numbers of patients who do not experience what were once typical symptoms, such as joint destruction and deformity.

³Cross-sectional study:

A research method used to investigate the health status of a certain group of study participants at a single point in time.

⁴Antibodies:

Substances designed to eliminate bacteria and viruses that have entered the body. Antibodies suited for the specific bacterium or virus are generated upon contact with the invader. By measuring the quantity of antibodies for the bacterium or virus, it is possible to determine whether or not a patient has been infected.

⁵Adult Health Study (AHS):

A clinical research program based on biennial health examinations. The study's major objective is to investigate disease incidence and other long-term health effects of A-bomb radiation. About 20,000 participants have been followed since 1958.

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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.