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**Analysis of Inflammatory Tests for Chronic Thyroiditis among Atomic Bomb Survivors Using Principal Component Analysis Method**

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Purpose: (1) The relationship between each of the multiple inflammation tests for chronic thyroiditis given to atomic bomb survivors and radiation will be analyzed using the principal component analysis standardized scores, which best reflect the individual inflammation conditions. (2) As the correlation between autoimmune hypothyroidism and radiation doses is known, the relationship between standardized scores of the patients with this disease and radiation doses will be analyzed. Subjects and methods: The subjects are 6,304 individuals with known DS86 doses and other data, such as smoking history, who underwent seven inflammation tests between 1988 and 1992. Of these individuals, 2,923 had inflammatory diseases, 274 of whom had chronic thyroiditis. Using the principal component analysis standardized scores of the seven inflammation tests, relationships of these tests to radiation doses were examined by means of regression analysis. The relationship between the said scores of the 41 autoimmune hypothyroidism patients (Hiroshima, 9; Nagasaki, 32) during the same period and radiation doses was examined. Results and conclusion: The relationship of the principal component analysis standardized scores to doses was significant ( $\beta = 0.219$ ,  $p = 0.0118$ ). The relationship between the standardized scores and doses was significant for Hiroshima, but was not for Nagasaki. Analysis of the standardized scores of autoimmune hypothyroidism patients showed no significant relationship with doses.

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**A Mail Survey of Mental Health Status in Atomic Bomb Survivors in Nagasaki**

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We conducted a mail survey of atomic bomb survivors in Nagasaki to elucidate relationship between mental health status and factors including atomic bombing and current lifestyle. The mental health status was assessed with GHQ-12 item questionnaire administered to 7,670 atomic bomb survivors who received health examinations from 1994 to 1996. We mailed a self-administered questionnaire to them in 1997 and asked their circumstances in which they were at the bombing, current socio-economic status and lifestyle: a total of 4,890 (63.8%) responded. The mean GHQ-12 score was significantly higher in those: (1) who were exposed proximally, (2) who lost family members by the bombing, (3) who had acute symptoms, (4) whose house had severely been damaged, (5) who had ceased drinking, (6) who were unmarried (single), (7) who were living alone, and (8) who were in bad health status, as compared with "controls." These findings suggest that severity of atomic bombing, and current lifestyle and living condition had some effects on atomic bomb survivors' mental health.

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**Analysis of Factors Related to Mental Health of Atomic Bomb Survivors**

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We analyzed relationship between mental health of atomic bomb survivors and factors including current condition of health, socio-economic status and atomic bombing. We defined a stratified random sample of 5,000 people from 56,969 atomic bomb survivors who underwent the atomic bomb survivors' health survey conducted by Nagasaki city municipality in 1997. Out of 5,000 survivors, 3,831 were interviewed and were measured their mental health with GHQ-30 item questionnaire. Frequency of subjects whose GHQ-30 score was 8 or more was higher in subjects whose social activity was low and who had severe experience by bombing, as compared with "controls". Factors revealed by logistic regression analysis to have relationship with mental health of atomic bomb survivors were sex, age, health status, social activity, recall of the bombing and anxiety about radiation effects on their health.