

Letter to the Editor

Benign Thyroid Diseases among Chernobyl Liquidators

To the Editor;

Seventeen years have passed since the accident at the Chernobyl Nuclear Power Plant. The only clear evidence of the result of this accident is that a dramatic increase of thyroid cancer has been observed after the accident among residents who were exposed by radiation-fallout at a young age [1]. However, the radiation risk for adults around Chernobyl remains unclear. Besides such effects among general population, the health consequences for the so-called “liquidators” are also an important issue [2–3]. Some liquidators were dispatched from Kazakhstan, others from former USSR countries. They have been examined at the Republic Hospital of World War II Invalids in Almaty, Kazakhstan, and received regular medical examination as “national heroes”.

According to a study of A-Bomb survivors in Nagasaki, it was shown that external irradiation had increased the risk of benign thyroid nodules and autoimmune thyroiditis, as well as thyroid cancer [4]. Although several studies suggest the possibility of the development of autoimmune thyroid diseases among exposed residents around Chernobyl [5], there is no report about an increased incidence of such diseases among liquidators.

To elucidate this issue, we performed a screening of anti-TPO (thyroid peroxidase) antibody and thyroid-stimulating hormone (TSH) in circulation, in order to examine the frequency of benign thyroid diseases among liquidators.

We randomly collected serum from 57 liquidators (males), who have been followed up at the Republic Hospital of World War II Invalids (average age: 44.2 years old). According to the records of Kazakhstan Government, the average exposure doses of the liquidators dispatched from Kazakhstan are estimated to have been from 2.9×10^{-2} to $2.2 \mu\text{Sv/year}$. Furthermore, we also collected serum from 54 residents (males) living round Semipalatinsk Nuclear Testing Site (SNTS), where hundreds of nuclear tests had been

conducted during the period of the former USSR (average age: 48.3 years old). For control purposes, we collected serum from 51 healthy males (average age: 38.2 years old) living in Almaty. All samples were collected in 2002, and were subjected to the measurement of TPO antibody and TSH by radioimmunoassay.

Interestingly, only 3 (5.3%) out of 57 liquidators showed hypothyroidism ($\text{TSH} > 5.0 \text{ mIU/L}$), whereas 1 (1.9%) out of 54 controls and 2 (4.0%) out of 50 residents around SNTS showed hypothyroidism. There was no statistical difference among the three groups. Also, only 3 (5.3%) out of 57 liquidators tested positive for anti-TPO antibody, whereas 1 (1.9%) out of 54 controls and 2 (4.0%) out of 50 residents around SNTS tested positive.

Although age structure of each group is not completely matched, our results indicate a low incidence of benign thyroid diseases at the present time among liquidators who worked at Chernobyl Nuclear Power Plant just after the accident. However, careful long-term follow-up of this cohort is essentially needed since the increasing incidence of autoimmune thyroiditis among A-Bomb survivors in Nagasaki was proved for the first time in 1994, i.e. 49 years after the explosion of the bomb [4].

References

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