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1 Letter to the Editor

2 Freedom from stigma in Fukushima

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11 Abstract:

12 Six people sued Tokyo Electric Power Company due to thyroid cancer found after the Fukushima
13 accident. Addressing concerns about health effects and stigma against Fukushima and affected
14 individuals among the public is urgent. While the radiation exposure has not caused discernible
15 increases in thyroid cancer among the affected children, the cause of cancer in individuals cannot be
16 identified. The increase in thyroid cancer is attributed minorly to radiation exposure and mainly to
17 the early diagnosis and the overdiagnosis. Importantly, post-accident cancer patients bear the burden
18 of suffering irrespective of the cause. It is important to share scientific and social knowledge with the
19 public, including the differences in risk assessment between population and individuals, the suffering
20 of cancers detected by examinations, and judicial decisions as a remedy to solve the stigma issues.
21 This will free the people of Fukushima from stigma and help empathize with the suffering of affected
22 individuals.

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24 Main text:

25 Six people recently sued Tokyo Electric Power Company because they believed thyroid cancer
26 occurred due to radiation exposure after the Fukushima accident in 2011 [1]. Five former Japanese
27 prime ministers referred to this when they opposed the European Commission's policy of using
28 nuclear power as a clean energy source. The current prime minister criticized them for potentially
29 causing discrimination against Fukushima residents. Given that judicial decisions often grant
30 damages as a remedy, regardless of causality, addressing concerns about health effects and stigma
31 against affected areas and individuals associated with the accident among the public is an urgent issue.
32 Thyroid cancer has been detected by examinations on children aged < 18 years in Fukushima at the
33 time of the accident, with an incidence rate of 1–2 orders of magnitude higher than in other regions
34 [2]. Based on scientific evidence of low exposure dose and epidemiological studies, the international
35 consensus is that radiation exposure has not caused discernible increases in thyroid cancer among
36 children [3]. This does not mean that a specific cancer patient has no attributable risk due to radiation
37 exposure [4]. The increase in thyroid cancer is attributable minorly to radiation exposure and mainly
38 to early diagnosis and/or over-diagnosis of the cancer associated with the examination [3]. The cancer
39 cause among individuals cannot be identified but can be explained by probabilistic contributions from
40 various factors. Importantly, post-accident cancer patients bear the burden of suffering, whether due
41 to radiation effects, early diagnosis, or over-diagnosis [5, 6].
42 To resolve the stigma issue, sharing the following scientific and social knowledge among the public

43 is essential: differences in risk assessment between population and individuals; suffering from cancer
44 detected by examinations; judicial decisions as remedies. This will free the public in Fukushima from
45 its stigma and help empathize with the suffering of affected individuals.

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