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*Commentary*

# Causes of Increasing Incidence of Childhood Thyroid Cancer After the Fuskushima Accident.

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**Introduction**

Shimura et al. state in the abstract of their article (1): A Comprehensive Review of the Progress and Evaluation of the Thyroid Ultrasound Examination Program, the Fukushima Health Management Survey: ,,… *our results suggested that the increased incidence of childhood thyroid cancer in Fukushima Prefecture was not caused by radiation exposure, but rather by the highly sensitive detection method*".

## COMMENTARY

Considering a mean sensitivity of ultrasound-guided Fine Needle Aspiration Biopsy (US-FNAB) of thyroid nodules to detect malignant tumors of 86,5% (2) it will take at least two screening rounds until about 98% of all preexisting, prevalent thyroid malignancies will have been detected (prevalence-phase). Yet, after this double screening, US-detected cancers most likely represent only recently developed ones (incidence-phase). After that, increasing incidences in US-detected thyroid cancers represent a real incidence of newly developed ones and can no longer be explained by the screening method itself that apparently continues to be applied. This was the case in the Fukushima prefecture after 2011. The high incidence of thyroid cancer in the US & FNAB-investigated population, observed in 2014 and 2016 in the Fukushima prefecture (1) most likely was mainly caused by the detection of preexisting, prevalent, clinically not yet apparent thyroid cancers. Due to the known latency period of about 4 years for the clinical appearance of thyroid cancers in children and adolescents after radioactive iodine exposure (3,4), only those, detected between 2014 and 2016 may be explained by the sensitive screening-method itself and not yet by newly developed ones. Thus, the high incidence since 2018 most likely can be explained only by newly developed and no preexistent thyroid cancers (1, 5). As in 2018, 2020 and 2022 the same screening method had been applied, it is extremely unlikely that the method itself is responsible for this second increase. It is thus much more plausible and likely that the increased radiation exposure of the population in the Fukushima prefecture after 2011 is responsible for this second rise in incidence of thyroid cancer in children and young adults (**figure 1**).

A similar increase in incidence of thyroid neoplasms, as now observed in the Fukushima prefecture after 2018 has been demonstrated in the Ukraine and in Belarus after the Chernobyl accident in 1986 (4). As a screening for thyroid cancers had not been performed at this time, the initial very high incidence of neoplasms, as currently documented around Fukushima between 2014 and 2016 (2, 5), has not been observed.

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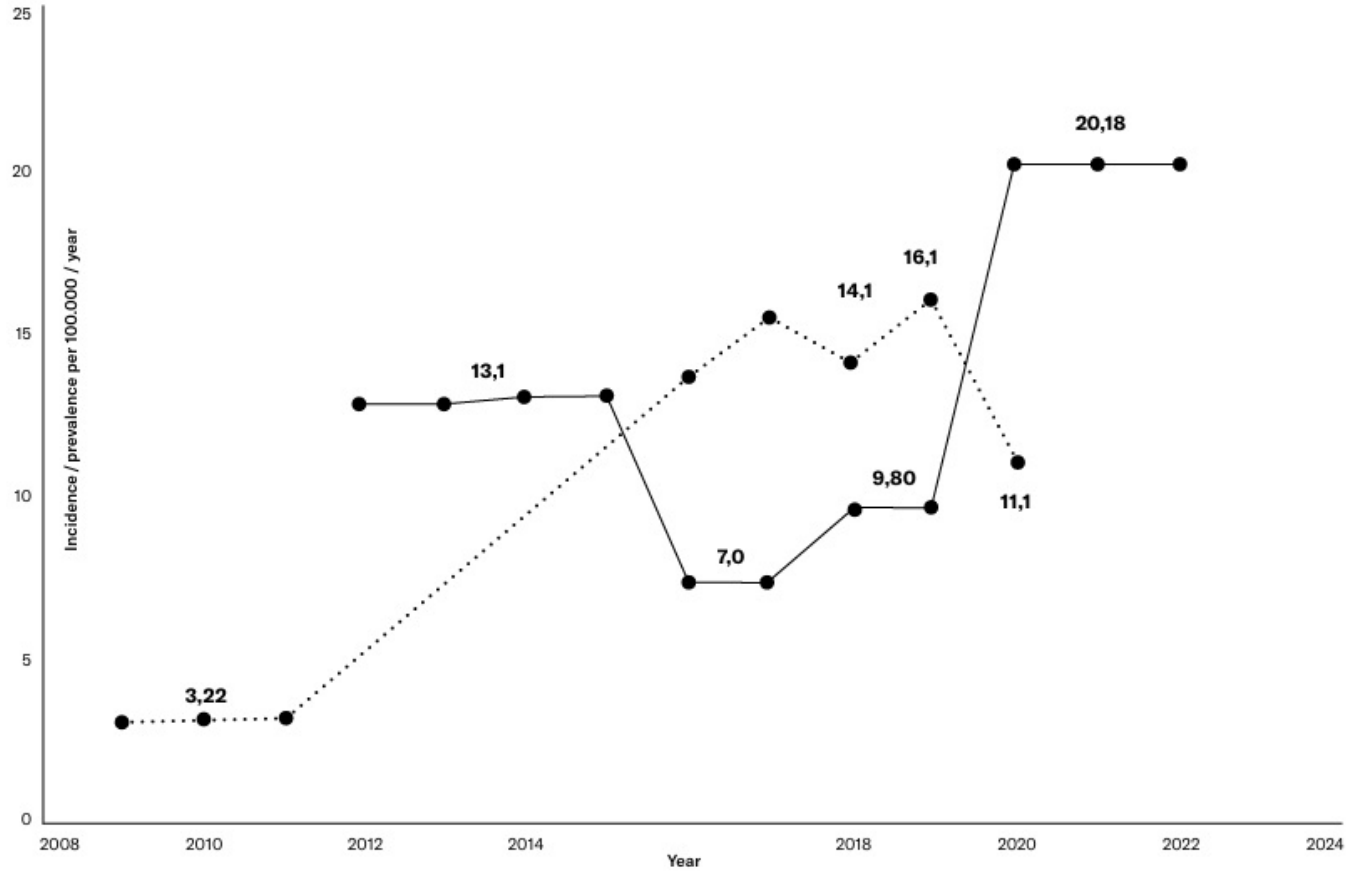
**Figure 1.** Below: Incidence of spontaneously detected thyroid cancers in <=19 years old persons per year 2009-2011 (6) and 2016-2020 (7). Above: First prevalence of thyroid cancers, detected by US-screening and cytological investigation in <=18 years old residents 2012-2015 and its incidence 2016-2020 in the Fukushima Prefecture after the Nuclear Plant Accident (2, 5).

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