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Screening to blame for thyroid cancer 'epidemic' in South Korea

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The current "epidemic" of thyroid cancer in South Korea is due to an increase in the detection of small tumours, most likely as a result of overdetection by screening, finds a study published by *The BMJ* today.

The researchers say concerted efforts are needed at a national level to reduce unnecessary thyroid ultrasound examinations in the general population.

South Korea has the highest incidence rate of thyroid cancer in the world. Between 1999 to 2009, rates of thyroid cancer increased by more than sevenfold, from 6.3 per 100,000 to 47.5 per 100,000 people. The economic burden of thyroid cancer in South Korea also increased around sevenfold, from $257m in 2000 to $1724m in 2010.

Overdiagnosis is believed to be the most plausible explanation.

Overdiagnosis refers to the detection of harmless cancers that will not cause symptoms or death during a patient's lifetime. But because it is not possible to distinguish between lethal and harmless cancers, all cancers detected mainly by screening are treated.

This exposes people to the potential side effects of treatment, but without an equal expectation of benefit, because the cancer is unlikely to advance.

However, some sceptics remain unconvinced. So to investigate whether

screening for thyroid cancer led to the current "epidemic" in South Korea, a team led by Jin Soo Lee at the National Cancer Center Research Institute in Goyang, analysed the medical records of 5,796 thyroid cancer patients diagnosed in 1999, 2005, and 2008.

Most participants were women with an average age of 47 years. Age-standardised incidence of thyroid cancer was estimated, and the changes in incidence between 1999 and 2008 were examined according to how the tumour was detected (by screening, by clinical symptoms associated with thyroid disease, or unspecified).

Between 1999 and 2008, they found more than a sixfold increase in thyroid cancer incidence, from 6.4 to 40.7 per 100,000 people.

Of the increase, 94% (34 per 100,000 people) were for tumours less than 20 mm, which were detected mainly by screening and 97% of the total increase was for localised and regional stage tumours.

Even where cases were clinically detected, 99.9% of the increase (6.4 per 100,000 people) over the same period were for tumours less than 20 mm.

"Our study shows that the increase in the incidence of thyroid cancer in South Korea mainly resulted from overdetection, most likely as a result of widespread use of sensitive imaging tools (eg. ultrasound examination)," say the authors.

"Considering the increase in thyroid cancer incidence, the financial burden of using ultrasound to detect small tumours (and the often unnecessary subsequent surgery) is expected to rise rapidly," they warn.

They call for concerted efforts at national level "to reduce unnecessary ultrasound examination of the thyroid in the asymptomatic general

population, unless clinically indicated."

In a linked editorial, US researchers say these findings "strongly suggest that the increase is due to overdiagnosis rather than an as yet unidentified new risk factor. Even more importantly, their data suggest that we might need to re-examine what we include in our definition of subclinical or indolent disease," they add.

More information: Association between screening and the thyroid cancer "epidemic" in South Korea: evidence from a nationwide study, www.bmj.com/content/355/bmj.i5745

Editorial: Overdiagnosis of thyroid cancer, www.bmj.com/content/355/bmj.i6312

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