Global review of research confirms thyroid cancer overdiagnosis

September 26 2016

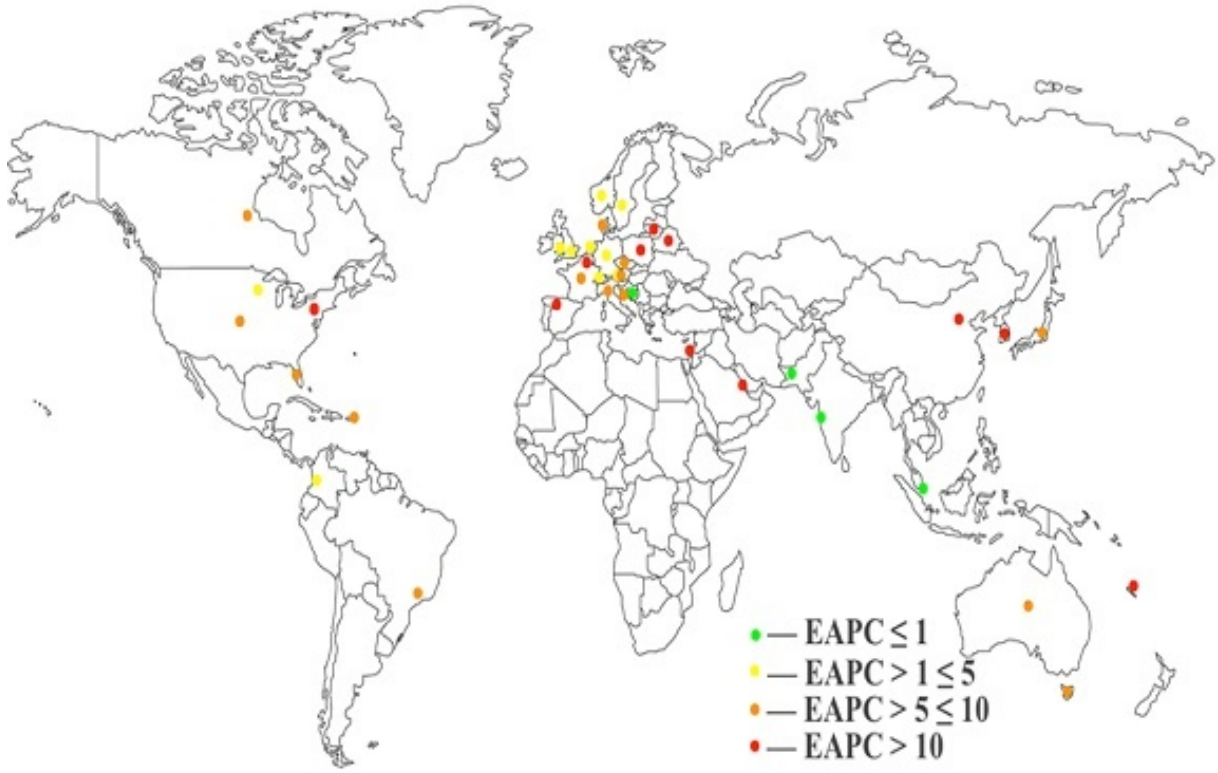

Figure shows the estimated annual percentage change (EAPC) in rates of thyroid cancer over the period of study. Credit: University of Sheffield

A widescale review of research into thyroid cancer has confirmed that the increased incidence of the disease globally is most likely due to overdiagnosis.

Researchers from the University of Sheffield looked at all English language studies reporting on the incidence and risk factors for thyroid cancer published between 1980 and 2014. Most studies recorded a significant increase in the disease over the last 35 years, the highest in South Korea - over 900% in a 12 year period.

The increase has been predominantly in a common and slow growing type, called papillary thyroid cancer. But since mortality rates have remained relatively stable over the same period, the researchers conclude that the increased detection is not due to an actual increase in the occurrence of these tumours. In many cases, they believe, the disease may not have progressed to cause symptoms or become life-threatening.

"Thyroid cancers are now increasingly picked up incidentally as small nodules, during neck scans for non-thyroidal illnesses or thyroid surgery for benign disease," says lead researcher and consultant surgeon Saba Balasubramanian, a senior lecturer in the University of Sheffield's School of Medicine and Biomedical Sciences.

"Currently, as part of standard treatment in the UK and elsewhere, this incidental detection leads to further scans and/or biopsies and, in many cases, surgical treatment. If, as our research and other recent studies1 indicate, these cancers are 'dormant' and not life-threatening, the treatment currently considered as standard may not be the best approach."

The review also explored the results of autopsy studies, which can provide an idea of dormant disease in the population. Although women are thought to be two to three times more likely to develop thyroid cancer than men, the review found that thyroid cancer identified during autopsy was equally common in both sexes.

"A lot of research has tried to explain why thyroid cancer affects women

more than men, by looking at risk factors related to hormones or reproduction," says Dr Balasubramanian.

"No definite cause and effect relationship has yet been found, so the higher rates in women may also be due to over diagnosis, rather than increased risk. Women are more likely to undergo investigations for benign thyroid disease and are probably more in contact with the health care system, all of which increases the likelihood of dormant thyroid cancer being picked up."

The review – carried out by two medical undergraduates, Joe Wiltshire and Tom Drake, together with Dr Balasubramanian and Dr Lesley Uttley from the University of Sheffield's School of Health and Related Research – included 60 studies from across the globe; although the majority were undertaken in developed countries, mainly Europe and North America. Some of the highest increases in incidence of thyroid cancer were seen in Italy, South Korea and the USA, countries where the use of imaging and thyroid surgery is generally on the increase.

"Although countries such as South Korea have seen a nearly 10-fold increase, the risk in UK is several-fold lower. However, we still need to consider the implications of this research and other studies that have reached similar conclusions," said Dr Balasubramanian. "Over diagnosis inevitably leads to unnecessary investigations and treatment. We need to take a step back and consider whether incidentally detected thyroid lumps should be managed conservatively and whether monitoring these tumours would be better than providing surgery – which has several serious risks related to effects on voice, calcium metabolism and thyroxine treatment.

"Further research is needed to improve our understanding of the natural history and prognosis of incidentally detected disease, so we can better inform clinicians and patients about benefits and risks of proposed

treatments."

The review also suggests that some of the increased incidence is likely to be real, but that little research has been done into potential risk factors underlying this. Suspected risks include greater exposure to ionizing radiation from increased medical imaging, or from atomic bomb radiation and accidents at nuclear reactors. The Sheffield team has called for further study into potential risk factors.

More information: Joseph J Wiltshire et al. Systematic Review of Trends in the Incidence Rates of Thyroid Cancer, *Thyroid* (2016). DOI: 10.1089/thy.2016.0100

Provided by University of Sheffield