

## COPMMENTARY

# Effectiveness of Ultrasonographic Screening for Thyroid Cancer: Round-table Conference in the National Evidence-based Healthcare Collaborating Agency (NECA) in conjunction with the Korean Thyroid Association

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### Abstract

**Background:** The incidence rate of thyroid cancer has been increasing worldwide in recent years, and it is also the most prevalent cancer when it comes to the number of patients among Korean women. With it, ultrasonographic screening test has also become very common. However, there is still controversy over the performance of this screening test. Therefore, the National Evidence-based Healthcare Collaborating Agency (NECA) organized a Round-table Conference on the issues regarding ultrasonographic screening for thyroid cancer in Korea. The objective of the conference was mainly about delivering worthwhile information reflecting social value for the current situation, which was based on evidence surrounding thyroid cancer screening that relevant experts investigated and agreed on. The significance of this Round-table Conference lies in the fact that we reviewed the current evidence, and we were able to discuss the social value and future direction for ultrasonographic screening in Korea.

**Keywords:** Thyroid cancer - cancer screening - consensus development conference

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### Introduction

Thyroid cancer is the most common malignant endocrine tumor, and its incidence rate has been increasing worldwide for the last three decades (Pellegriti et al., 2013). This trend is a particularly striking in Korea. Incidentalomas of the thyroid gland are often found, and the incidence rate of thyroid cancer has increased dramatically (Ahn and Park, 2009).

Accordingly, it is the leading cause among female cancers as of 2010 (Jung et al., 2013; Cho et al., 2013). The incidence rate of thyroid cancer was number seven, accounting for 3.3% of total cancer cases in 1999 and became number one, accounting for 17.8% in 2010.

Based on data for women alone, the incidence rate was 6.5% in 1999 and increased to 30.1% in 2010, showing a remarkable increasing pattern among newly diagnosed cancers (Jung et al., 2013). Because it has socio-economic effects on healthcare, thyroid cancer has come to the fore as a very critical national issue.

Thyroid cancer screening with ultrasonography is common along with the rapid increase of disease burden of thyroid cancer in Korea. Han et al. (2011) analyzed the current status of thyroid screening in Korea. According to the data from the Korea National Cancer Screening Survey (KNCSS) in 2009, 13.2% (8.4% men and 16.4% women) of all participants (2,000 Korean adults) underwent thyroid ultrasonography. However, there are several factors to

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consider performing valid screening tests according to the Wilson and Jungner criteria (1968). First, it should be an important health problem for both an individual and the community. Second, there should be an accurate and acceptable screening test which detects the problem at the asymptomatic phase. Third, by screening, treatment started at an early stage should be of more benefit than treatment started later. Fourth, the benefit of the screening should outweigh the risk.

Therefore, the National Evidence-based Healthcare Collaborating Agency (NECA) organized a Round-table Conference on issues regarding thyroid cancer screening using ultrasonography in Korea. The objective of the conference was mainly about delivering worthwhile information reflecting social value for the current situation, which was based on scientific evidence surrounding thyroid cancer screening which the relevant experts investigated and agreed on.

### Plan for NECA Round-table Conference

A Round-table Conference for NECA is a type of consensus development conference that has been held since 2009. Its features have developed the Consensus Development Program (CDP) of the National Institute of Health (NIH) in the U.S.A. as a model; its aims are for the efficient dissemination of research and information provision through societal consensus. The NECA original research 'Effectiveness of thyroid cancer screening using ultrasonography' (Kim et al., 2012) was appraised for its importance, awareness and appropriateness for the Round-table Conference at the end of the research. For disseminating better information for Korean society, NECA made a decision to hold a Round-table Conference with the Korean Thyroid Association (KTA). Thereafter, NECA-KTA consisted of a committee to organize the Round-table Conference.

The first meeting introducing the NECA Round-table Conference was held in April 2013. Recognizing the importance of KTA research was accepted for the development of the NECA Round-table Conference, and the next meeting was held in May. In this prior Round-table Conference meeting, clinical professionals were invited and reviewed issues on thyroid cancer screening by hosting KTA-NECA joint symposium during the Annual Scientific Meeting of KTA (August 31, 2013). As a result, those issues from the meeting and joint symposium were used to constitute the key questions of the NECA Round-table Conference as follow.

*Key Question I. Increasing burden of thyroid cancer in Korea*

*Key Question II. The current status of ultrasonographic screening*

*Key Question III. Effectiveness of ultrasonographic screening for thyroid cancer*

*Key Question IV. The Necessity and direction of further research*

The final NECA Round-table Conference was held in December, 2013, and a consensus statement draft was drawn. During the NECA Round-table conference, a total of 12 panelists was convened. The panel was composed of

five people recommended by KTA (three endocrinologists, one thyroid radiologist, and one endocrine surgeon), six NECA researchers (4 family physicians and 2 non-clinicians), and one person related to policy, and the panel was presided over by the chief director of KTA.

### Outcomes of the NECA Round-table Conference

Consensus statements for the four key questions were discussed, and some corrections were made on the draft of the consensus statements.

*Key Question I. Increasing burden of thyroid cancer in Korea*

In recent years, the incidence rate of thyroid cancer has shown a sharp increase nationwide. Based on the 2010 cancer statistics published by the Korea Central Cancer Registry (KCCR) in 2012 (Jung et al., 2013), the most common cancer was thyroid cancer (there were 36,021 cancer cases, and the standardized incidence rate was 61.9/100,000 individuals).

Since 1999, the average annual growth rates of thyroid cancer were the highest in both men and women (men 24.8% and women 24.2%) based on age-standardized cancer incidence rates. Particularly in women, the average annual growth rate of thyroid cancer showed a big gap compared to that of breast cancer (6.3%) which was ranked next (Jung et al., 2013).

The rising trend of the incidence rate for thyroid cancer is not a phenomenon limited to Korea but a worldwide one, and it has been increasing for the last 30 years (Pellegriti et al., 2013). However, the age-standardized incidence rate for thyroid cancer in women was 88.6/100,000 in 2012, 4 times greater than that of the U.S.A. and 13 times and 18 times greater those that of Japan and the U.K., respectively.

However, so far, nothing has been clearly found regarding the cause of the increasing incidence rate of thyroid cancer (Sungwalee et al., 2013). It could be attributed to early detection from examinations; however, environmental factors and genetic factors all seem to contribute to the increasing incidence rate.

*Key Question II. The current status of ultrasonographic screening*

Because thyroid cancer has become more prevalent, more adults have been opt to get ultrasonographic screening. The results of a survey (Hyun et al., 2012), which was carried out with 3,633 adults between 20-70 years of age nationwide as targets, showed that 23.3% of the participants experienced thyroid ultrasonographic screening (lifetime inspection) (women 31.3%, in their 50's 28.8%). Among those individuals who received ultrasonographic screening, 70.7% were normal, 23.6% were diagnosed with thyroid nodules and 1.9% were diagnosed with thyroid cancer.

*Key Question III. Effectiveness of ultrasonographic screening for thyroid cancer*

The result of a systematic review found that the evidence was insufficient to decide whether ultrasonographic

screening and/or early detection with early treatment was effective or not to reduce the morbidity or mortality from thyroid cancer.

#### *Key Question IV. The Necessity and direction of further research*

Although thyroid cancer has become prevalent along with ultrasonographic screening, the scientific evidence with which we can make clear decisions regarding the effectiveness of screening is insufficient. Further studies evaluating the effectiveness of thyroid ultrasonographic screening are needed at a national level to promote public health.

For this, national level studies on the following areas are needed: clinical effects such as a decrease in the death and recurrence rates due to early detection of thyroid cancer by screening, the cause of the increasing incidence rate of thyroid cancer, risk factors and predictors, and high-risk group selection. Through further research, scientific guidelines are required to develop a screening system that establishes the basis of diagnostic standards and systematizes a thyroid cancer screening algorithm.

#### *Future challenges*

The incidence rate of thyroid cancer has been increasing worldwide in recent years, and it is also the number one cause of cancer when it comes to the number of patients among Korean women. The reason behind this status is still unknown, but the advancement of ultrasonographic technology and its examinations, which have become very common, contribute to this increase in part. To be more specific, the increase in the discovery of accidental species thanks to high resolution ultrasound technology and the increase in the detection rate of papillary microcarcinoma of the thyroid by fine-needle aspiration biopsy are part of the reason for this increase (Davies & Welch, 2006). Therefore, some people have raised their concern for over-diagnosis in the screening of cancer.

In order to discuss the effectiveness of thyroid cancer screening, a study on the diagnostic accuracy of screening and the effect of early treatment should be done first. However, evidence used to discuss the effectiveness of early treatment by screening is still insufficient for the kind of studies on the epidemiologic features of thyroid cancer and the effectiveness of screening. In fact, not only Korea but also other countries around the world are in the same situation in that any decisions about the effectiveness of thyroid cancer screening cannot be made at present, and the formation of a basis to evaluate the screening is necessary, which may be a pressing issue that needs to be solved. In the U.S.A. (US Preventive Services Task Force, 1996) and U.K. (British Thyroid Association & Royal College of Physicians, 2007), there are clinical guidelines for the management of thyroid cancer.

In Korea, also, considering the extremely rapidly increasing incidence rate of thyroid cancer, its socioeconomic impact, and contradictively low rate of mortality (Cho et al., 2013), we need to prepare the proper guidelines for diagnosis and treatment and to conduct studies on a national level. The significance of this Round-table Conference lies in the fact that we

reviewed the current evidence, and we were able to discuss the necessity of forming a basis and direction for ultrasonographic screening for thyroid cancer in the future. Clinical professionals who perform thyroid cancer screening are the main stakeholders, and people who have to decide whether to actually receive thyroid cancer ultrasound screening may be another main stakeholder. However, general public were not included as part of the panel for the Round-table Conference; hence, their point of view was not reflected in the consensus statement.

Through the Round-table Conference, all the participants tried to look for ways to address these controversial issues based on scientific evidence; however, relevant bases were insufficient for us to draw a conclusion. Nevertheless, reminding clinical experts of the lack of evidence supporting ultrasonographic screening and sharing an awareness of the need for more cautious approaches to screening were the biggest reward of the conference. In addition, the conference, unlike before, was organized jointly with the relevant clinical society and researchers. It could provide clinical professionals with an opportunity to participate in the debate more actively and this kind of experience and serve as a foundation for the advancement of Round-table Conferences later on in the country. Furthermore, organizing Round-table Conferences together with the relevant clinical academic society will make it possible for the results to be disseminated to experts and relevant communities and subsequently, to seek more effective measures for the issues that were brought up through the conference.

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