

SCREENING

Updated sex-specific calcitonin thresholds improve occult medullary thyroid cancer screening

In individuals with sporadic C-cell disease, the predictive power of raised calcitonin levels to identify occult medullary thyroid cancer increases when sex-specific calcitonin thresholds are used as opposed to unisex calcitonin thresholds. Andreas Machens and colleagues (Martin Luther University Halle–Wittenberg, Germany) believe these findings may contribute to the development of more accurate biochemical parameters to improve preoperative stratification of individual medullary thyroid cancer risk. “We frequently need to counsel patients referred to our institution for total thyroidectomy who were given a working diagnosis of medullary thyroid cancer because of increased calcitonin levels,” explains Machens, “when, in fact, not all of these patients turn out to have medullary thyroid cancer.”

In a retrospective analysis, Machens *et al.* evaluated the association between calcitonin levels and medullary thyroid

cancer in 100 patients diagnosed with occult sporadic C-cell disease (≤ 10 mm) and increased calcitonin levels—basal and pentagastrin-stimulated calcitonin levels were measured in all patients.

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Overall, the researchers found that the prevalence of medullary thyroid cancer increased with raised calcitonin levels. However, in patients with modest increases in calcitonin levels, women revealed occult medullary thyroid cancer 4–8 times more often than men. Furthermore, Machens’ team calculated that in order to discriminate between C-cell disease and medullary thyroid cancer in 100% of patients in their study, the normal upper limit of basal calcitonin thresholds had to

be increased up to 4-fold in women and 8-fold in men. Likewise, the corresponding pentagastrin-stimulated calcitonin thresholds had to be increased up to 25-fold in women and 50-fold in men.

The researchers stress that while calcitonin screening remains a powerful tool for detecting C-cell disease, an update of the screening thresholds based on sex will help to reduce false positive results and minimize the number of unnecessary operations that have enormous clinical and economic potential for damage. “We would expect to see gender-specific calcitonin thresholds eventually becoming an integral part of clinical practice guidelines on calcitonin screening for occult medullary thyroid cancer,” concludes Machens.

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Original article Machens, A. *et al.* Importance of gender-specific calcitonin thresholds in screening for occult sporadic medullary thyroid cancer. *Endocr. Relat. Cancer* 16, 1291–1298 (2009)