Editorial

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Subclinical Hypothyroidism or Thyroid Autoimmunity and Variant Angina: By Chance? or with a Chance?

In Sook Kang, MD[1] and Wook Bum Pyun, MD[2]

[1]*Department of Internal Medicine, College of Medicine, Yonsei University, Seoul,*
[2]*Department of Internal Medicine, School of Medicine, Ewha Womans University, Seoul, Korea*

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Proper functioning of thyroid is of importance due to its effects on the cardiovascular system.[1)2)] Furthermore, the relationship between hyperthyroidism and coronary vasospasm is well-known and has been continuously reported since the first description in a case report in 1979.[3-5)] The most important treatment of thyroid disease is the control of thyrotoxicosis and the majority of cases showed excellent outcomes after treatment of thyroid problems.[5)]

While the relationship with hypothyroidism, including subclinical hypothyroidism, and coronary vasospasm has not been well-established until date, Nishikawa et al.[6)] reported their experience with variant angina in a patient of isolated adrenocorticotropin deficiency, inappropriate vasopressin secretion, and Hashimoto's thyroiditis. However, the patient had additional endocrine problems and the authors concluded that this variant angina was more related with the isolated adrenocorticotropin deficiency rather than Hashimoto's thyroiditis. In 1979, an earlier report demonstrated a case of variant angina that was well controlled with nitrate administration, and aggravated with the development of hypothyroidism and concurrent use of propranolol. Authors extrapolated aggravation of variant angina by working on beta blockers, which mediated alpha-mediated coronary artery spasm rather than treating hypothyroidism alone.[7)] Hence, it is complicated to search previous evidence regarding the effect of hypothyroidism or subclinical hypothyroidism on coronary artery vasospasm.

Nonetheless, there is some theoretical background that demonstrates the possibilities of hypothyroidism or thyroid autoimmunity-mediated coronary artery vasospasm. Most commonly accepted mechanisms for coronary artery spasm include endothelial dysfunction and primary hyperactivity of vascular smooth muscle cells,[8)] and there are several articles that show endothelial dysfunction in hypothyroidism or subclinical hypothyroidism. Napoli et al.[9)] reported patients with acute hypothyroidism after surgical thyroidectomy or primary chronic hypothyroidism related to impaired endothelial and non-endothelial vasodilation. Moreover, recent data shows relation between subclinical hypothyroidism due to autoimmune thyroiditis and impaired endothelial dysfunction (both endothelium dependent and independent) and increased inflammatory markers in patients when compared to healthy volunteers.[10)] They concluded that low grade chronic inflammation may be one of the factors that contribute to endothelial dysfunction in subclinical hypothyroidism with autoimmunity.

In this regards, KCJ, Lee et al.[11)] demonstrated relationship of autoimmunity, positive anti-thyroperoxidase (TPO) antibodies, and subclinical hypothyroidism to variant angina, which was confirmed by ergonovine provocation. Although the study lacked strong statistical correlation, it provides us with clinical implication that subclinical hypothyroidism or autoimmunity-related endothelial dysfunction might be presented as variant angina. However, studying compositions of thyroid function status in the subjects with positive anti-TPO antibodies may provide more accurate information, because of heterogeneity of positive provocation test group; including euthyroidism and subclinical hyperthyroidism. Definition of subclinical hypothyroidism is clear with high thyroid stimulating hormone (TSH) and normal free thyroxine (T4) levels. Other variations of hypothyroidism include low triiodothyronine (T3) syndrome (low T3

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Correspondence: Wook Bum Pyun, MD, Department of Internal Medicine, School of Medicine, Ewha Womans University, 1071 Anyangcheon-ro, Yangcheon-gu, Seoul 158-710, Korea
Tel: 82-2-2650-5308, Fax: 82-2-2650-5424
E-mail: pwb423@ewha.ac.kr

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with normal TSH and free T4) and overt hypothyroidism (elevated TSH and low free T4). Anti-TPO antibodies are positive in 90% of Hashimoto's thyroiditis cases, 75% of Graves' disease cases, 10–20% of nodular goiter or thyroid carcinoma cases and even in 10–15% of normal individuals.[12)]

Even though variant angina is frequently observed in real world practice and has been well-known for decades, there are still a number of mechanisms and trigger factors that remain to be solved.[8)] In the absence of definite evidences of relationship of overt hypothyroidism and coronary vasospasm, the weak relationship of subclinical hypothyroidism or thyroid autoimmunity including heterogeneous entities with coronary vasospasm can be considered. that the results come either by chance or with chance. The results may weaken the relationship between coronary vasospasm and thyroid dysfunction including hyperthyroidism and hypothyroidism, but it is clear that the results may be a trigger for future studies on clarifying the relationship between hypothyroidism and its variations, coronary vasospasm, and the effects of thyroid hormone on treatment of coronary vasospasm, especially with respect to medically intractable cases.

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