



## THYROID NODULES

### Selenium may prevent goiter and thyroid nodules

#### BACKGROUND

Iodine deficiency is an important cause of hypothyroidism and thyroid nodule formation world-wide. It is a major public health concern such that countries whose diets are iodine deficient have national programs that add iodine to food. Adding iodine to salt is a major way this is done. Selenium is a mineral that is linked to iodine and also plays an important role in the function of the thyroid gland. It is concentrated within the thyroid gland and is used in proteins that are important in making the thyroid hormones. In countries that suffer from severe selenium deficiency, there is an increase in hypothyroidism and thyroid nodule formation. However, these regions are also frequently iodine deficient, a clear role for selenium in the development of hypothyroidism and nodule formation has been difficult to show. In this study, the authors examined the relationship between selenium, thyroid size and nodule formation in an iodine deficient country (Denmark) before and after national iodine repletion.

#### THE FULL ARTICLE TITLE

Rasmussen LB et al. Selenium status, thyroid volume, and multiple nodule formation in an area with mild iodine deficiency. *Eur J Endocrinol* 2011;164:585-90. Epub January 17, 2011.

#### SUMMARY OF THE STUDY

This study examined the association between serum selenium concentration and thyroid volume, both before and after iodine fortification was introduced in Denmark. Subjects were participants in the Danish Investigation of Iodine Intake and Thyroid Diseases

study. Two groups, one of women and one of men, were studied. Thyroid ultrasounds were performed before and after iodine repletion.

Thyroid volume decreased significantly in the group after iodine repletion. Interestingly, serum selenium decreased slightly (5%) during this period. After iodine repletion, the lower the serum selenium level, the larger the thyroid was in women but not in men. Low serum selenium levels also increased the risk for multiple thyroid nodules in women.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that selenium has an effect on thyroid volume and multiple nodule formation in women. This study also supports some previous studies that suggest that sufficient selenium intake is one of the environmental factors that may add to the prevention of goiter and thyroid nodules. Further studies are needed to evaluate the potential role of selenium treatment in patients with goiter and thyroid nodules. Since the United States has enough selenium in the food, there is no indication to take extra selenium to prevent thyroid nodules or goiter.

— Alan P. Farwell, MD

#### ATA THYROID BROCHURE LINKS

Thyroid Nodules: [http://thyroid.org/patients/patient\\_brochures/nodules.html](http://thyroid.org/patients/patient_brochures/nodules.html)

Goiter: [http://thyroid.org/patients/patient\\_brochures/goiter.html](http://thyroid.org/patients/patient_brochures/goiter.html)

Iodine Deficiency: [http://thyroid.org/patients/patient\\_brochures/iodine\\_deficiency.html](http://thyroid.org/patients/patient_brochures/iodine_deficiency.html)

*continued on next page*



## THYROID NODULES, continued

### ABBREVIATIONS & DEFINITIONS

**Goiter:** a thyroid gland that is enlarged for any reason is called a goiter. A goiter can be seen when the thyroid is overactive, underactive or functioning normally. If there are nodules in the goiter it is called a nodular goiter; if there is more than one nodule it is called a multinodular goiter.

**Thyroid nodule:** an abnormal growth of thyroid cells that forms a lump within the thyroid. While most thyroid nodules are non-cancerous (Benign), ~5% are cancerous.

**Thyroid Ultrasound:** a common imaging test used to evaluate the structure of the thyroid gland. Ultrasound uses soundwaves to create a picture of the structure

of the thyroid gland and accurately identify and characterize nodules within the thyroid. Ultrasound is also frequently used to guide the needle into a nodule during a thyroid nodule biopsy.

**Iodine:** an element found naturally in various foods that is important for making thyroid hormones and for normal thyroid function. Common foods high in iodine include iodized salt, dairy products, seafood and some breads.

**Selenium:** a mineral found naturally in various foods that is important for making thyroid hormones and for normal thyroid function. It is needed in small amounts by the body.