



THYROID NODULES

Metformin shrinks thyroid nodules in patients with insulin resistance

BACKGROUND

In many patients with diabetes, the main abnormality is insulin resistance, meaning that higher amounts of insulin are required to keep blood glucose in the normal range. Insulin resistance is also found in individuals who have yet to develop diabetes. Individuals with insulin resistance have also been shown to have an increased number of thyroid nodules. Metformin is a diabetes drug that decreases insulin resistance. This study examined if metformin had any effect on the size of thyroid nodules in patients with insulin resistance.

THE FULL ARTICLE TITLE

Rezzonico J et al Metformin treatment for small benign thyroid nodules in patients with insulin resistance. *Metal Syndr Relate Disord* 2011;9:69-75. Epub December 3, 2010.

SUMMARY OF THE STUDY

The study group included 80 women who had insulin resistance and solid, non-cancerous thyroid nodules up to 2 cm in size. Nodule volume was determined using ultrasound evaluation. The women were randomly assigned to one of four treatment groups and followed for 6 months: 1. treated with metformin alone; 2. treated with metformin and levothyroxine; 3. treated with levothyroxine alone and 4. no treatment. The metformin

dose was 1000 mg twice daily; the dose of levothyroxine was adjusted to keep the serum TSH level at 0.11 to 0.99 mU/L. Patients were treated for 6 months and then reevaluated using ultrasound.

Thyroid nodule size decreased by 74% in the group treated with metformin alone and by 95% in the group treated with metformin plus levothyroxine. The nodule size was unchanged in the other two groups.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

In this small study, metformin produced a significant decrease in nodule size within 6 months in patients who also had insulin resistance. This also suggests that insulin resistance may play a role in the development of thyroid nodules. At this point, this study is too small to recommend metformin for patients with thyroid nodules but certainly indicates that more studies should be performed to confirm these findings. If confirmed, this would be a valuable addition to the treatment options for patients with thyroid nodules.

— Alan P. Farwell, MD

ATA THYROID BROCHURE LINKS

Thyroid Nodules: http://thyroid.org/patients/patient_brochures/nodules.html

ABBREVIATIONS & DEFINITIONS

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.

TSH: thyroid stimulating hormone – produced by the pituitary gland that regulates thyroid function; also the best screening test to determine if the thyroid is functioning normally.

Insulin resistance: a condition where higher amounts of insulin are required to keep blood glucose in the normal range. This occurs in many patients with diabetes and in individuals at risk for developing diabetes.

Metformin: a diabetes drug that decreases insulin resistance.