



## GOITER

### Metformin prevents goiter in patients with type 2 diabetes

#### BACKGROUND

An enlarged thyroid gland is known as a goiter. There is an increased likelihood that patients with diabetes will develop thyroid disorders. This is higher in patients with type 1 diabetes, which is an autoimmune disorder like many thyroid disorders. Type 2 diabetes is more common and is not an autoimmune disorder. Studies have shown that patients with type 2 diabetes have larger thyroid glands than those without diabetes. Metformin is a drug that is frequently prescribed to control blood sugar in patients with type 2 diabetes. A prior study showed that metformin inhibits the growth of thyroid cells in the laboratory. This study examined the effects of metformin on thyroid size in type 2 diabetic patients versus those without diabetes.

#### THE FULL ARTICLE TITLE

Ittermann T et al. Metformin inhibits goitrogenous effects of type 2 diabetes. *Eur J Endocrinol* 2013;169:9-15.

#### SUMMARY OF THE STUDY

This study took place from 1997-2006 in West Pomerania, Germany. There are a lot of people in this region with a goiter and, because of this, there has been ongoing screening of the population for thyroid disorders with blood tests, thyroid ultrasound and thyroid measurements to see if they had a goiter. In this study, 2570 people were

studied initially and 1088 of this group was followed over an average of 5 years. Records, physician assessments and self-reported diabetes medication use were used to determine if patients had type 2 diabetes.

Women with type 2 diabetes on medications other than metformin had a larger thyroid volume than women without diabetes and had a higher incidence of goiter. Women on metformin for type 2 diabetes had a similar thyroid volume and similar incidence of goiter as women without diabetes. There was no such association in men. Interestingly, those patients that were on metformin and then switched to other diabetes medications also had a higher thyroid volume than patients without diabetes.

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

This study suggests that metformin prevents growth of the thyroid gland. This is important to patients because this study shows that metformin gives type 2 diabetic patients an additional benefit. This study also suggests that metformin may play a future role in the treatment goiter

— Heather Hofflich, DO

#### ATA THYROID BROCHURE LINKS

Goiter: <http://www.thyroid.org/what-is-a-goiter>

#### 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.

**Diabetes:** a disorder caused by lack of insulin to control blood sugar levels. Type 1 diabetes is an autoimmune disorder where the insulin producing cells are destroyed. Type 2 diabetes is more common

and is caused by the body being resistant to normal levels of insulin.

**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.

**Metformin:** a diabetes drug that controls blood sugar levels by decreasing insulin resistance.