



HYPERTHYROIDISM

Antithyroid drug–induced agranulocytosis is about 10-fold more common in amiodarone-induced thyrotoxicosis than in thyrotoxicosis due to other causes

BACKGROUND

The antithyroid drugs methimazole (MMI) and propylthiouracil (PTU) are used to treat hyperthyroidism. While these drugs are usually well tolerated, they do have side effects. The most severe side effect is agranulocytosis, which is a severe decrease in white blood cells that fight infection causing an increased risk of developing a serious infection. Agranulocytosis is very rare, occurring in 0.2-0.5% of treated patients.

Amiodarone is a medication used to treat irregular heart rhythms. It contains a very high amount of iodine that can cause thyroid problems. It can cause thyrotoxicosis either due to too much thyroid hormone production or leakage from the gland. This is treated with antithyroid drugs (ATDs), steroids, or both. The researchers performed this study to compare the ATD-associated agranulocytosis risk in amiodarone-induced thyrotoxicosis (AIT) patients with those who had thyrotoxicosis from other causes (non-AIT).

THE FULL ARTICLE TITLE

Gershinsky M et al 2019 Increased risk of antithyroid drug agranulocytosis associated with amiodarone-induced thyrotoxicosis: a population-based cohort study. *Thyroid* 29:193–201. PMID: 30648930.

SUMMARY OF THE STUDY

The study was done using the largest health services provider database in Israel (Clalit Health Services). Patients 18 years and older who had a diagnosis of thyrotoxicosis, hyperthyroidism, thyroid nodule, thyroid goiter, or benign nodule of the thyroid who received a prescription for ATDs between January 1, 2002 and December 31, 2015 were studied. Those with cancer, transplanta-

tion, lupus, bone marrow disease, or had been treated with medications that can affect the immune system were excluded.

There were 14,781 patients who had received treatment with ATDs for thyrotoxicosis. In 593 patients (4%) the thyrotoxicosis was attributed to amiodarone treatment. These patients were older and more obese than those with non-AIT, there were more males and more smokers. Other medical problems, including hypertension, diabetes, and renal failure were more common. These patients were also taking other drugs for heart problems.

In the first year of ATD treatment, 8 patients (1.3%) with AIT and 20 patients (0.14%) with non-AIT developed ATD-induced agranulocytosis. A total of 1 patient with AIT and 3 with non-AIT died. The starting dose of the ATDs were higher in patients with AIT and with patients who developed ATD-induced agranulocytosis.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Patients with amiodarone-induced thyrotoxicosis were at higher risk to develop ATD-induced agranulocytosis compared to patients with non-AIT. AIT patients with ATD-induced agranulocytosis were older, had more health problems, and were taking more heart medications. This is the first study showing that the risk for a potentially life-threatening side effect of ATDs is higher in AIT patients. More studies in several different populations are needed to confirm the findings. The findings from this study may guide physicians to follow patients with AIT more closely by increasing awareness of risk factors.

— Ebru Sulanc, MD

ATA THYROID BROCHURE LINKS

Hyperthyroidism (Overactive): <https://www.thyroid.org/hyperthyroidism/>





HYPERTHYROIDISM, continued

ABBREVIATIONS & DEFINITIONS

Hyperthyroidism, thyrotoxicosis: a condition where the thyroid gland is overactive and produces too much thyroid hormone. Hyperthyroidism may be treated with antithyroid meds (Methimazole, Propylthiouracil), radioactive iodine or surgery.

Methimazole: an antithyroid medication that blocks the thyroid from making thyroid hormone. Methimazole is used to treat hyperthyroidism, especially when it is caused by Graves' disease.

Propylthiouracil (PTU): an antithyroid medication that blocks the thyroid from making thyroid hormone. Propylthiouracil is used to treat hyperthyroidism, especially in women during pregnancy.

Agranulocytosis: a marked decrease in the white blood cell count that causes a patient to be more likely to develop an infection. This is commonly associated with a fever and/or a sore throat.

White blood cells: the infection-fighting cells of the blood.

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.

Amiodarone: an iodine-rich drug that is commonly used for the treatment of irregular heart rhythms. Amiodarone can cause thyroid problems, including both hypothyroidism and hyperthyroidism

Amiodarone induced Thyrotoxicosis: elevated thyroid hormone levels that can occur as a result of excessive iodine from amiodarone resulting in increased thyroid hormone production and secretion or to destruction of thyroid cells with release of thyroid hormone into the blood

