



HYPERTHYROIDISM

When and how to use antithyroid drugs during the first trimester of pregnancy

BACKGROUND:

Antithyroid drugs, such as methimazole (MMI) and propylthiouracil (PTU) have been used to treat hyperthyroidism during pregnancy. The American Thyroid Association and the Endocrine Society guidelines recommend using PTU in the 1st half of pregnancy if drug treatment is needed due to a greater frequency of birth defects with MMI. This increased risk of birth defects with MMI is very small as a Food and Drug Administration review of all pregnancies between 1969-2009 found 29 reports of birth defects associated with MMI use in the first trimester of pregnancy as compared to 9 reports of PTU-associated birth defects. Two more recent studies have found a higher rate of birth defects (2-4%) in children exposed to MMI during the first trimester of pregnancy and one of these also reported some cases of PTU-associated birth defects. However, four other recent studies have not found an association between the use of antithyroid drugs during pregnancy and the development of birth defects. The present article analyzes these recent 6 studies to explain the different results found in an attempt to determine if there is actually an increased risk of birth defects with antithyroid drugs.

THE FULL ARTICLE TITLE:

Laurberg P and Andersen SL. Antithyroid drug use in pregnancy and birth defects: why some studies find clear associations, and some studies report none. *Thyroid*. September 17, 2015 [Epub ahead of print].

SUMMARY OF THE STUDY:

The two studies that showed an association between MMI use and birth defects included a much larger number of children exposed to MMI during the first trimester of pregnancy (1231 and 1907 children, respectively) as compared to the four studies that found no association (73, 108, 30, and 124 children, respectively). In addition, the studies that found no association looked only for certain major birth defects and not the minor ones specifically associated with antithyroid drug use in the prior studies.

The study that reported PTU-associated birth defects did not include more children as compared to the other studies (564 children versus 1399, 603, 915, 507, 52

children exposed to PTU, respectively); however, this study evaluated children over a longer period of time, up to two years of age, while the other studies evaluated children up to maximum one year of age. The PTU-associated birth defects were in general milder and diagnosed later when they resulted in complications, usually after one year of age.

One of the two studies that showed an association between MMI use and birth defects recorded the thyroid function test results of the pregnant women and found no association between abnormal thyroid test results in early pregnancy and the development of birth defects.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The studies that found no association between the use of antithyroid drugs in early pregnancy and birth defects in the offspring did not include enough subjects and did not follow the children for a long enough period of time to detect these abnormalities. In summary, it appears that as many as 2-4% of children exposed to MMI in the first trimester of pregnancy may develop birth defects, some of them being severe. PTU use in early pregnancy can also result in birth defects at a much lower rate.

Because of the increased risk of birth defects with MMI as compared to PTU, the American Thyroid Association and the Endocrine Society guidelines recommend to use PTU to treat hyperthyroidism in the first trimester of pregnancy and then switch to MMI for the rest of the pregnancy. Certainly, as is the case with all medications during pregnancy, if antithyroid drugs are needed, they should be limited to the lowest effective dose possible during the first trimester of pregnancy. As previously recommended, PTU and not MMI is the preferred antithyroid drug for use in early pregnancy if needed, since it results in less frequent birth defects.

— Alina Gavrila, MD, MMSC

ATA THYROID BROCHURE LINKS

Hyperthyroidism: <http://www.thyroid.org/hyperthyroidism/>

Thyroid and Pregnancy: <http://www.thyroid.org/thyroid-disease-pregnancy/>

**HYPERTHYROIDISM**, continued**ABBREVIATIONS & DEFINITIONS**

Hyperthyroidism: 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.

Antithyroid drug: medication that blocks the thyroid from making thyroid hormone

Methimazole: an antithyroid medication used to treat hyperthyroidism, especially when it is caused by Graves' disease.

Propylthiouracil (PTU): an antithyroid medication used to treat hyperthyroidism, especially in early pregnancy.

Newborn period: the first month of life.

Thyroid Awareness Monthly Campaigns

The ATA will be highlighting a distinct thyroid disorder each month and a portion of the sales for Bravelets™ will be donated to the ATA. The month of January is **Thyroid Awareness Month** and a bracelet is available through the [ATA Marketplace](#) to support thyroid cancer awareness and education related to thyroid disease.

