



THYROID AND PREGNANCY

Birth defects are more common than other complications in pregnant women treated with anti-thyroid drugs

BACKGROUND

Hyperthyroidism, particularly Graves' disease, is more common in women than men, especially in women of childbearing age. Untreated hyperthyroidism in pregnancy can affect both the mother and the developing baby. The preferred antithyroid drug in non-pregnant women is Methimazole. During pregnancy, the current American Thyroid Association guidelines recommend propylthiouracil as the drug of choice for newly diagnosed Graves' disease and to switch to propylthiouracil if already on therapy. The reason for this is that, while both of these medications have been associated with birth defects when used in the first trimester, the risk is lower and the defects appear to be less severe with propylthiouracil. Both antithyroid drugs also have similar side effects, including the rare, but potentially serious, side effect of agranulocytosis (low white blood cells) that can lead to potentially serious infections, and the more rare side effect of liver failure. The goal of this study was to determine the frequency of these two adverse side effects as compared to birth defects in the general population and in pregnant women in an effort to guide the treatment of hyperthyroidism in pregnancy.

THE FULL ARTICLE TITLE

Andersen SL et al. Antithyroid drug side effects in the population and in pregnancy. *J Clin Endocrinol Metab* 2016; 101 (4): 1606-14. Epub January 27, 2016.

SUMMARY OF THE STUDY

Children born from January 1st, 1973 until December 31, 2008 and their parents were identified using the Danish Medical Birth Register. Exposure to antithyroid drugs was obtained from the Danish National Prescription Register, which contains information from January 1st, 1995. Information on the outcomes was obtained from the Danish National Hospital Register, which contains inpatient diagnoses since 1977 and inpatient and outpatient diagnoses since January 1995. All visits from January 1st 1995 until December 31, 2010 were included. Birth defects registered before the age of 2 years were included. To study the pregnant women, the population was restricted to women who gave birth to a live-born child between 1996-2008. The study population included

2,299,952 people, out of which 28,998 people were treated with antithyroid in the study period.

Results showed there were 41 cases of agranulocytosis and 11 cases of liver failure per 5 millions inhabitants during a 10 year period. Among all people exposed to antithyroid drugs, there were 45 cases of antithyroid drug-associated agranulocytosis (0.16%) and 10 cases of antithyroid drug-associated liver failure (0.03). There were 830,680 pregnancies and 848,022 live born babies, of which 2206 were exposed to antithyroid drugs during pregnancy. One case of agranulocytosis occurred during pregnancy and one case of liver failure was associated with pregnancy, both while treated with propylthiouracil. A total of 75 children (3.4% of exposed babies) were estimated to have birth defects associated with antithyroid drugs. Unfortunately, the types and severity of birth defects were not reported.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

In the Danish Population, antithyroid drug-associated birth defect and agranulocytosis were more common than antithyroid drug-associated liver failure. In pregnant Danish women, birth defects were the most frequent associated complication of antithyroid drugs. This study is important for patients because restricting the use of these medications in early pregnancy, when clinically possible, can decrease antithyroid drug-related side effects in pregnant women and likely will prevent birth defects related to antithyroid drugs. In addition, planning definitive treatment of hyperthyroidism with either surgery or radioactive iodine prior to pregnancy in women of childbearing age is an option that would also prevent birth defects associated with the use of antithyroid drugs in pregnancy.

— Liuska Pesce, MD

ATA THYROID BROCHURE LINKS

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

Graves' disease: <http://www.thyroid.org/graves-disease/>

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



THYROID AND PREGNANCY, continued

ABBREVIATIONS & DEFINITIONS

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.

Liver failure: Loss of liver function that occurs rapidly, usually in a person who has no history of liver disease.

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.

Graves disease: the most common cause of hyperthyroidism in the United States. It is caused by antibodies that attack the thyroid and turn it on.

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.

