Title: Lack of association between thyroid autoantibodies and parity in a population argues against microchimerism as a trigger of thyroid autoimmunity.

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SUMMARY
Background: Thyroid autoimmunity is more common in females than in males. One possible explanation for this female preponderance may be the effect of oestrogens on the immune system. It has also been argued that foetal microchimerism involving transfer of foetal cells into maternal tissue may play an important role.

Objective: The authors investigated the association between the presence of circulating thyroid autoantibodies and previous pregnancy, parity and the use of oral contraceptives (OCs) and hormone replacement therapy (HRT) in a population cohort.

Methods: The authors examined 3712 women randomly selected from the general population. Serum was analysed for thyroid peroxidase antibody (TPO-Ab) and thyroglobulin antibodies (Tg-Ab) using assays based on a RIA technique. Data were analysed in logistic regression models to adjust for possible confounders. Women previously treated for thyroid disease or with a pregnancy within one year prior to the study were excluded from the analyses.

Results: In both univariate and multivariate models and whether the presence of TPO-Ab and Tg-Ab was investigated alone or in combination, findings were negative with respect to an association between circulating thyroid antibodies and previous pregnancy, number of pregnancies, parity and previous abortion. There was no association between thyroid antibodies and use of OCs. Women aged 60-65 years receiving HRT now or previously had a lower prevalence of Tg-Ab; no such association was observed between HRT and TPO-Ab.

Conclusions: In this population study, there was no association between previous pregnancy, parity and thyroid antibodies, which argues against the role of microchimerism as a trigger of thyroid autoimmunity. Exogenous oestrogens may reduce aspects of autoimmunity.

COMMENT
Microchimerism is a new concept in autoimmune diseases, based on the presence of a small number of cells from different individuals coexisting within tissues. Foetal microchimerism is the migration of foetal cells into maternal blood and the prolonged engraftment of foetal progenitor cells into maternal tissues. Foetal-derived DNA has been found in maternal blood as early as in the first trimester of gestation, and as late as four decades after pregnancy. Several recent studies have shown that foetal microchimerism occurs within the thyroid gland in women with Hashimoto’s and Graves’ disease. Today however, the functional consequences of persisting foetal microchimerism are not yet known and only beginning to be explored. The foetal cells which remain engrafted in maternal tissue (i.e. the thyroid gland) after the delivery may play a role in antigen
presentation and thus possibly in the aetiology of autoimmune thyroid diseases (AITD) and also in the modulation of thyroid autoimmunity during and after pregnancy. The rationale of present study was therefore to search for an association between AITD and pregnancy-related features, such as parity and abortions. If microchimerism is an important factor in the pathogenesis of AITD, it would be expected that the prevalence of AITD be higher in women with more frequent previous pregnancies, compared with women without previous pregnancy. No such association was found, even though there was a tendency for women with 2 or 3 parities to have a higher prevalence of AITD than those with 1 (or 0) parity (not significant since the lower C.I. limit was <1). The authors concluded that foetal microchimerism was not a plausible trigger of maternal thyroid autoimmunity.

(Daniel Glinoer MD, PhD)

See the 2 Figures below

Figure 1 The association between thyroid autoantibodies (TPO-Ab and/or Tg-Ab) in serum and previous pregnancy, parity and abortion; odds ratios (ORs) with 95% confidence intervals (CIs) from four simple logistic regression models. No previous pregnancy, no parity and no abortion were the references. No statistically significant associations were present as 1 was included in all CIs. When data were tested in multivariate models the results were similar (n = 3283).

Figure 2 The association between TPO-Ab and/or Tg-Ab in serum and numbers of previous pregnancies and parities; ORs with 95% CIs from two simple logistic regression models. No pregnancy and no parity were the references. The risk of having thyroid autoantibodies was the same in women who had never been pregnant compared with women with one or more previous pregnancies and in nullipara compared with women with one or more previous parities. Women with one parity had a significantly lower risk of having thyroid antibodies than women with two or more parities (n = 3283).