

In Vitro Fertilization Outcomes Do Not Differ between Women with Adequately Treated Hypothyroidism and Women without Thyroid Disease

Busnelli A, et al.

differ per started cycle, per oocyte retrieval, or per embryo transfer. Among the cases, outcomes did not differ by antithyroid antibody status. Outcomes among the patients treated for subclinical and overt hypothyroidism did not differ except that the women with a history of overt hypothyroidism had more embryos transferred (mean, 2.1 vs. 1.9; $P = 0.03$).

Conclusions

Although the women with hypothyroidism were more likely to have IVF cycle cancellation for poor response and had lower rates of embryo transfer, pregnancy rates resulting from IVF-ICSI did not differ between women with adequately treated hypothyroidism ($TSH < 2.5$ mIU/L) and euthyroid women.

ANALYSIS AND COMMENTARY ● ● ● ● ●

These findings are discordant with those of Kilic et al. (3) and of Scoccia et al. (4), which reported reduced implantation and pregnancy rates in women with treated hypothyroidism as compared with women without thyroid dysfunction. However, mean serum TSH values of 2.2 mIU/L and 2.5 mIU/L in these previous studies suggest that treatment was not adequate in all participants. Kim and colleagues (2) previously randomly assigned 64 women with subclinical hypothyroidism who were undergoing IVF-ICSI to L-T₄ versus placebo and found lower miscarriage rates and higher live birth rates in treated women (mean TSH at the time of IVF initiation, 2.3 mIU/L) as compared with controls (mean TSH, 6.9 mIU/L). These results suggest a benefit of L-T₄ treatment for IVF outcomes in women with hypothyroidism, an outcome that could not be directly demonstrated by

Busnelli and colleagues, since all of the women with hypothyroidism in their study received L-T₄.

An important limitation of this study is the lack of data regarding adequacy of thyroid hormone-replacement throughout pregnancy in the studied women. Although there were no differences in outcomes of the antithyroid antibody-positive and negative L-T₄-treated women, the antithyroid antibody status of the control women was not ascertained.

Studies to date provide suggestive, although not unequivocal, evidence that L-T₄ treatment improves IVF outcomes in women with hypothyroidism. Given the average \$12,400 cost per IVF cycle in the United States (5), it seems prudent to ensure that serum TSH is < 2.5 mIU/L in all women with hypothyroidism prior to IVF cycle initiation.

References

1. Krassas GE, Poppe K, Glinoer D. Thyroid function and human reproductive health. *Endocr Rev* 2010;31:702-55.
2. Kim CH, Ahn JW, Kang SP, Kim SH, Chae HD, Kang BM. Effect of levothyroxine treatment on in vitro fertilization and pregnancy outcome in infertile women with subclinical hypothyroidism undergoing in vitro fertilization/intracytoplasmic sperm injection. *Fertil Steril* 2011;95:1650-4.
3. Kilic S, Tasdemir N, Yilmaz N, Yuksel B, Gul A, Batioglu S. The effect of anti-thyroid antibodies on endometrial volume, embryo grade and IVF outcome. *Gynecol Endocrinol* 2008;24:649-55.
4. Scoccia B, Demir H, Kang Y, Fierro MA, Winston NJ. In vitro fertilization pregnancy rates in levothyroxine-treated women with hypothyroidism compared to women without thyroid dysfunction disorders. *Thyroid* 2012;22:631-6.
5. American Society for Reproductive Medicine. Is in vitro fertilization expensive? Accessed at <http://www.asrm.org/detail.aspx?id=3023>.