Comparison of Two Drug Regimens for Hypothyroidism

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The full report is titled "Thyroid Hormone Replacement Therapy in Primary Hypothyroidism: A Randomized Trial Comparing L-Thyroxine plus Liothyronine with L-Thyroxine Alone." It is in the 15 March 2005 issue of *Annals of Internal Medicine* (volume 142, pages 412-424).
The authors are H.F. Escobar-Morreale, J.I. Botella-Carretero, M. Gómez-Bueno, J.M. Galán, V. Barrios, and J. Sancho.

What is the problem and what is known about it so far?

The thyroid is a gland in the neck that produces hormones that help to regulate metabolism. *Metabolism* refers to the body reactions that control how the body uses energy. Hypothyroidism is a condition in which the thyroid makes too little thyroid hormone and body functions slow down. Symptoms of hypothyroidism include tiredness, feeling cold, constipation, hoarse voice, changes in hair and skin, heavy menstrual periods, and weight gain. Thyroid disease is usually easily treated with a drug that contains a synthetic version of the thyroid hormone thyroxine. However, a normal thyroid gland produces both thyroxine and triiodothyronine. Some doctors believe that it is better to treat hypothyroidism using a combination of drugs containing synthetic versions of both hormones than with those containing synthetic thyroxine alone. Previous studies of this issue have had conflicting results, perhaps because they did not always use combinations of synthetic hormones that matched the amounts of hormones produced by a normal thyroid gland.

Why did the researchers do this particular study?

To compare treatment of hypothyroidism with synthetic thyronine (L-thyronine) alone and with a combination of L-thyronine and synthetic triiodothyronine (liothyronine) that was similar to the amounts of thyroid hormones produced by a normal thyroid gland.

Who was studied?

28 women with hypothyroidism.

How was the study done?

The researchers assigned patients to receive either L-thyroxine or combined L-thyroxine–liothyronine for 8 weeks. For the next 8 weeks, patients received the opposite treatment than the one they started with. For the next 8 weeks, all patients received a slightly higher dose of combined L-thyroxine–liothyronine. The researchers collected information on patients' blood levels of thyroid hormone, results of psychological tests, quality of life, indices of the function of various organs, and satisfaction with treatment while receiving each of the drug regimens.

What did the researchers find?

Of the 28 patients studied, 18 reported that they preferred the combination treatment. However, the researchers did not find any measurable differences in any of the other factors that they measured.

What were the limitations of the study?

The study included only 28 women studied for a relatively short period.

What are the implications of the study?

Treatment of hypothyroidism with a combination of L-thyroxine and liothyronine does not appear to offer any clear benefit over treatment with L-thyroxine alone.