



HYPOTHYROIDISM

Patients with chronic hepatitis C treated with interferon have a spectrum of different thyroid problems

BACKGROUND:

Interferon and ribavirin are medications used to treat patients with chronic hepatitis C. It has been known for a while that treatment with interferon can cause thyroid problems, most often hypothyroidism but also rarely hyperthyroidism. This medication is thought to affect the thyroid function through changes in the immune system and also through direct effects on thyroid cells in certain patients. However, the exact mechanisms of how this happens are not known. The goal of this study was to evaluate the type of thyroid problem and the immune response in patients with chronic hepatitis C who receive treatment with interferon and ribavirin.

THE FULL ARTICLE TITLE:

Soldevila B et al. A prospective study of T- and B-lymphocyte subpopulations, Th1/Th2 balance and regulatory CD4+CD25+CD127low/-FoxP3+ T cells in patients with chronic hepatitis C virus infection developing interferon-induced thyroiditis. Clin Endocrinol (Oxf) 2011 May 19. doi: 10.1111/j.1365-2265.2011.04112.x . [Epub ahead of print]

SUMMARY OF THE STUDY:

The study included 120 patients with chronic hepatitis C treated with interferon and ribavirin 11 of whom developed thyroid problems. All patients had normal thyroid function tests and negative antithyroid antibodies before receiving this treatment. The 11 patients who developed thyroid problems were compared to similar patients in the group that did not develop thyroid problems. Among the 11 patients who developed thyroid

disease, 9 developed hypothyroidism, 1 developed hyperthyroidism and 1 developed thyroid antibodies but the thyroid function remained normal. The thyroid problems developed in the first 6 months of treatment in the majority of these patients.

Blood immune cells were collected when thyroid disease was detected and analyzed to evaluate changes in the immune system on interferon treatment. The patients who developed thyroid problems had a greater increase in type 1 helper T cells that stimulate and coordinate the immune response in the body. The same immune response was noted in all of the 11 patients who developed thyroid problems.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that patients who develop thyroid problems during treatment with interferon develop a specific immune response that is different than those patients that remain with normal thyroid function. The same immune response occurred whether the patients developed hypothyroidism or hyperthyroidism. Further studies are required to evaluate why how this immune response causes the thyroid problems.

— Alina Gavrila, MD

ATA THYROID BROCHURE LINKS

Hypothyroidism: http://thyroid.org/patients/patient_brochures/hypothyroidism.html

Hyperthyroidism: http://thyroid.org/patients/patient_brochures/hyperthyroidism.html

continued on next page



HYPOTHYROIDISM, continued

ABBREVIATIONS & DEFINITIONS

Immune system: a system of organs, tissues, and cells in our body that has the role to recognize potentially harmful foreign substances and organisms as well as abnormal body cells and produce antibodies to destroy these factors.

Thyroid antibodies: these are antibodies that attack the thyroid instead of bacteria and viruses, they are a marker for autoimmune thyroid disease, which is the main underlying cause for hypothyroidism and hyperthyroidism in the United States.

Type I helper T cells: these are cells of the immune system that stimulate and coordinate the immune response in the body.

Hypothyroidism: a condition where the thyroid gland is underactive and doesn't produce enough thyroid hormone. Treatment requires taking thyroid hormone pills.

Hyperthyroidism: a condition where the thyroid gland is overactive and produces too much thyroid hormone. Hyperthyroidism may be treated with antithyroid medications (Methimazole, Propylthiouracil), radioactive iodine or surgery.