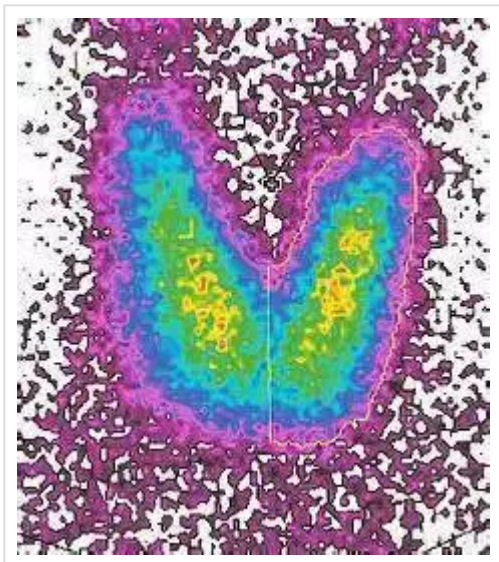


Jeffrey Dach MD

Bioidentical Hormones Natural Thyroid

Graves Remission with Iodine Case Report by Jeffrey Dach MD

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Graves' Hyperthyroidism Remission with Iodine Case Report by Jeffrey Dach MD

Carol is a 56 year old real estate agent who noticed a feeling of nervousness, warmth and rapid heart rate which worsened over a few days. Carol called a friend who drove her to the Emergency Room where the doctors gave her medications to slow the rapid rate (propranolol, a beta blocker). Lab testing confirmed she had Graves' hyperthyroidism. Carol was sent home with an appointment to see an endocrinologist a week later.

The Endocrinologist

The endocrinologist saw Carol and ran a thyroid lab panel showing a TSH of .001, which is very low. In addition, the other lab tests showed a FreeT3 of 1200 and a FreeT4 of 4.4, both markedly elevated. Her Thyroid Stimulating Immune-globulin (TSI) test was also very elevated, indicating Graves' Hyperthyroidism. This is an autoimmune disease in which antibodies attack and stimulate the TSH receptor of the thyroid gland causing high thyroid function. Carol was started on a thyroid blocking drug, methimazole 30 mg daily.

Carol Goes to a Health Resort

Unhappy with conventional treatment, Carol traveled to health resort ranch in Arizona specializing in organic raw vegetarian meals and fresh vegetable juices. She went to daily yoga classes, meditation and sauna treatments. The doctor at the Health Resort started Carol on a vitamin supplement program for her thyroid condition which included a potassium iodide capsule containing 65 mg of iodide.

Carol Starts to Feel Better !!

At the Health Ranch, Carol started feeling much better, almost normal, and her repeat her lab panel showed the TSH had gone back up to the normal range of 3.2. The other thyroid labs, the FreeT3 and FreeT4 had also normalized. However, the TSI remained quite elevated with little change.

Carol returned home and visited the endocrinology office. Her endocrinologist reviewed the labs, and then stopped the methimazole blocking drug. He said it was no longer needed. However, the Graves' antibodies, (the TSI thyroid stimulating antibodies), were still very elevated, so the endocrinologist recommended a subtotal hyperthyroidectomy, a surgical procedure to remove the thyroid gland. Carol was unhappy with this recommendation. She was not keen on having thyroid surgery, and came to see me in the office to get a second opinion.

Coming for a Second Opinion

This case illustrates the beneficial effect of Iodine on Graves' Disease, showing complete remission with a 65 mg potassium iodine tablet given at a health resort as part of a vitamin program.(1)



Left Image shows CAT scan of exophthalmos caused by hypertrophied extra-ocular muscles in Graves Disease. If severe, the optic nerve can be compromised at the orbital apex resulting in loss of vision. Antigens in the extraocular muscles and orbital fat may be attacked by the autoimmune disease process.

The History of Iodine Use for Hyperthyroidism- Exophthalmos Goiter

1811- Discovery of Iodine by Courtois

In 1811, Bernard Courtois, a French chemist accidentally discovered a purple substance which he named, Iodine.(1)

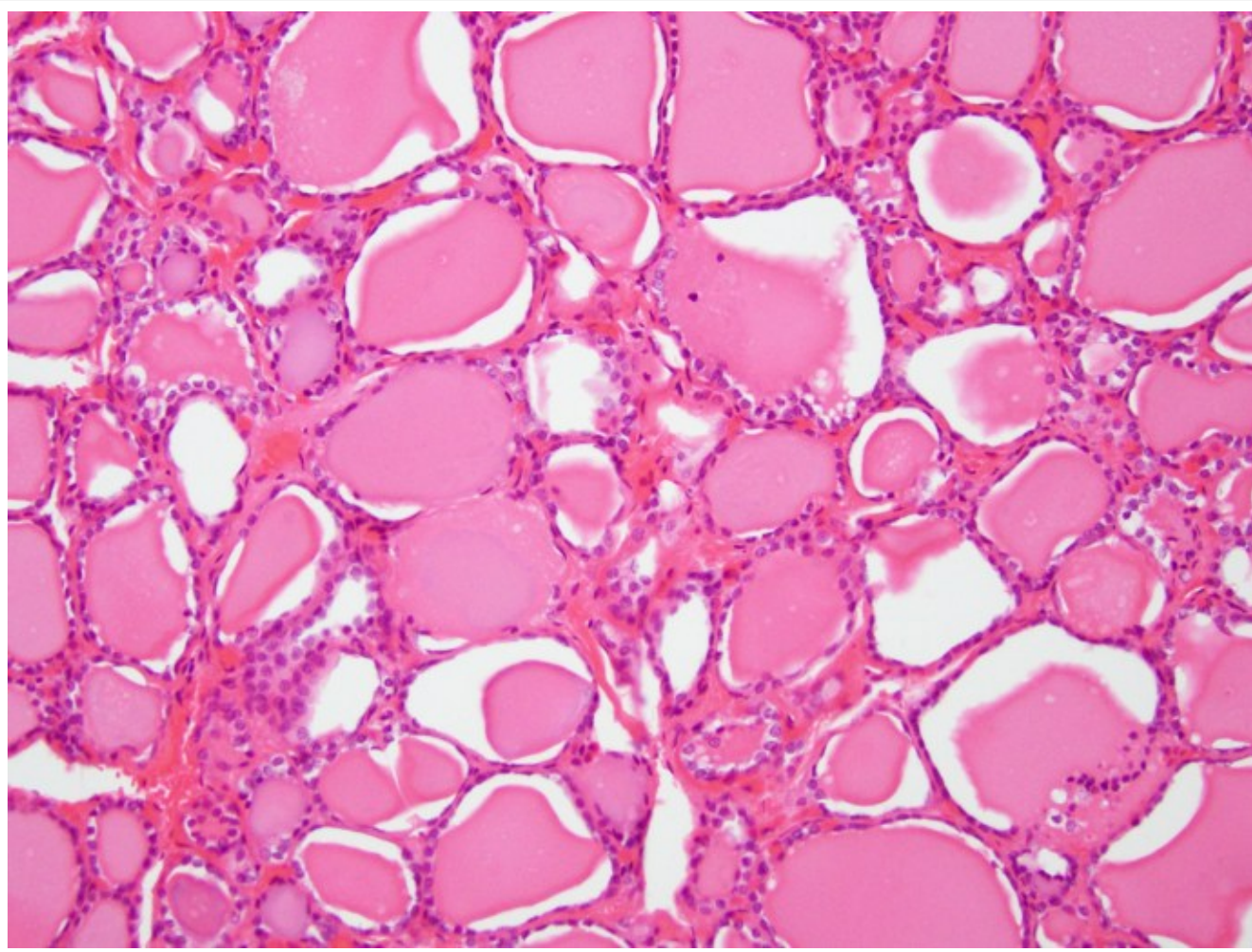
1863 – Dr. Trousseau Accidentally Discovers Iodine Cures Graves Disease.

In 1863, Trousseau was called to visit a sick woman with tachycardia caused by Graves' Hyperthyroidism.(2) Dr. Trousseau intended to write a prescription for tincture of Digitalis to slow the heart rate, but instead wrote for tincture of Iodine by mistake,

Upon initial examination the woman's heart rate was 140 to 150 times per minute. When Trousseau returned the next day, the lady's heart rate had slowed to normal. It was then he realized his mistake and discovered the

patient actually took 75-100 mg of Iodine over night. He cancelled the Iodine and again prescribed tincture of Digitalis.

The next day, Trousseau again examined the patient and found the pulse had again gone up to 150 beats per minute. Trousseau realized the Iodine induced a beneficial slowing of the heart rate, and remission of hyperthyroid symptoms. Trousseau then returned to the use of iodine, placing the patient back on her original iodine prescription. (2)



Above image : microscopic view of histology of normal thyroid gland showing thin layer of thyrocytes outlining the rounded lakes of colloid. These are called follicles.

Iodine – How does it work in Graves ?

It has been more than 150 years since Trousseau's accidental discovery of the beneficial effect on Graves' Disease patients. The question you might ask is: How does it work? What is the effect of Iodine on thyroid cell physiology? A basic science [study](#) by Corvilain in 1988 explains that Iodide inhibits hydrogen peroxide generation in the thyroid follicle, an important step in the organification of iodine to the thyroglobulin molecule.(3) Thus by inhibiting organic binding, Iodine inhibits formation and release of thyroid hormone by the thyroid gland, and thyroid levels decline promptly. This explains remission in Graves Hyperthyroidism.(19-21)

Left Image: Iodine in flask with purple color.



In 1920's, Drs Plummer, Starr, Lahey and Thompson published reports of successful use of Iodine for Graves Hyperthyroidism. (4-6). In the 1930's and 1940's, Drs. Thompson, Walcott and Redisch reported on their successful use of Iodine to treat Graves' Hyperthyroidism. (6-9)

Dr. Redisch in 1940 reported on his case experience which was favorable. One important distinction was made however, between Graves hyperthyroidism and the toxic nodular goiter. Dr Redisch felt that : *"Iodine should never be given to patients with old nodular goiters become toxic."*(9)



Left Image" Think Purple, purple tee shirt for Iodine.

The Wisdom of Drs Wolf and Wartofsky

In 1948, the great thyroidologists Wolff and Chaikoff published a report which stated (10):

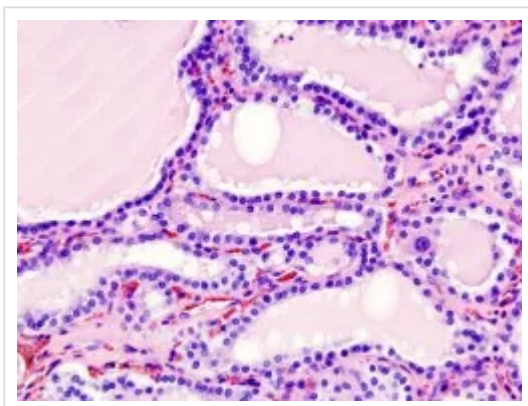
"we do believe that our findings justify the conclusion that an interference in organic binding of

iodine by the gland is an integral part of the mechanism by which iodine brings about a remission in Graves' disease." (10)

In 1970, the great thyroidologist, Dr. Wartofsky, published his report on the **"Inhibition by iodine of the release of thyroxine from the thyroid glands of patients with thyrotoxicosis."** in the Journal of Clinical Investigation (8). He stated,

"the decreased serum T4 concentration could only have resulted from decreased secretion of the hormone by the gland",

thus explaining how iodine induces remission in Graves Hyperthyroidism.(11)



Left Image: Microscopic histology slide of thyroid tissue of Graves' Hyperthyroid patient showing Hyperplasia thyroid cells lining the the follicular spaces (white areas). This is caused by overstimulation of the TSH receptor by TSI antibodies.

Iodine Not For Toxic Nodular Goiter

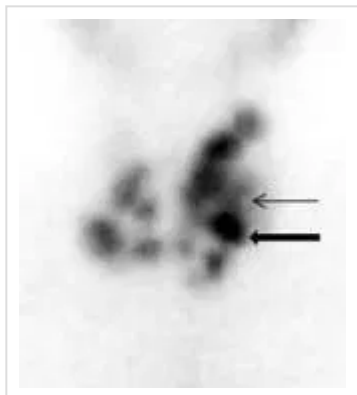
Iodine is contra-indicated in thyrotoxicosis caused by toxic nodular goiter. These patients may have a solitary or multiple thyroid nodules, one of which is hyper-functioning. These patients are "toxic", meaning they are hyperthyroid, because one of these nodules has mutated into a hyper-functioning autonomous

nodule.(17-18) In this type of nodule, there has been a mutation in the cell line coding for the TSH receptor

causing it to malfunction.. Thus the cells in the autonomous nodule uncontrollably convert iodine into thyroid hormone resulting in hyperthyroidism.(17-18)

The Autonomous Thyroid Nodule

My [previous article](#) discussed diagnosis and treatment of thyrotoxicosis caused by the autonomous thyroid nodule. The clinical history usually includes some form of Iodine exposure, perhaps obtained from the health food store. Ultrasound thyroid Imaging usually shows a dominant thyroid nodule. Radionuclide imaging with I-123 or Technetium 99M usually shows the “Hot Nodule” causing the thyrotoxicosis. The toxic nodule may be solitary, or may be present against a background of multiple nodules.



Differentiating Autonomous Nodule from Graves' Disease in the New Patient Presenting with Thyrotoxicosis

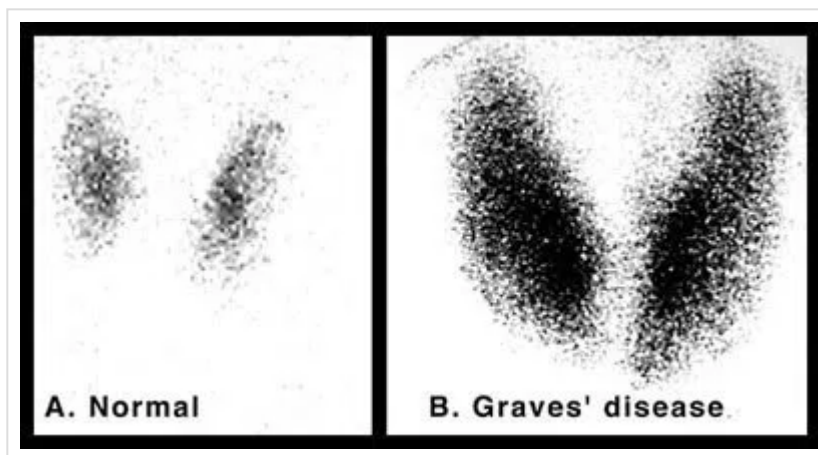
Since Iodine is useful for Graves' Disease, and is contra-indicated in the autonomous nodule (toxic nodule), it is important to determine whether the thyrotoxicosis is caused by Graves' Disease or a toxic nodule (Toxic Multinodular Goiter)

Image at upper left shows radioisotope scan with typical appearance of multiple thyroid nodules in Multinodular Goiter courtesy of IJEM. Arrows point to nodules.

Graves' Disease is an autoimmune thyroid disease in which there are antibodies to the TSH receptor detectable on blood testing. The newer [TRAb Thyroid Receptor Antibodies](#) are specific for Graves Disease. They come in two varieties, the stimulatory antibodies called TSI, and the inhibitory antibodies called TBII, (Thyroid binding inhibitory immunoglobulins). Both are sensitive and specific for Graves' Disease. The newest TBII test is called the H-TBII which uses human material rather than porcine material for the test. (34, 34a)

Dr Wallaschofski from Germany says in a [2004 article](#), the h-TBII test should be performed on all patients to differentiate Graves' from Toxic Multinodular Goiter, (34):

“... the h-TBII should be performed in all patients with hyperthyroidism to differentiate Graves' disease from non-autoimmune hyperthyroidism such as toxic multinodular goitre” quote from (34)



Above image shows radionuclide thyroid scan. Left Image: normal thyroid uptake. Right Image: Diffusely enlarged thyroid gland with increased radiotracer uptake typical appearance of Graves' Hyperthyroidism.

The thyroid gland in Graves' disease is usually smoothly enlarged on imaging and palpation (see image above).

On the other hand, In the patient with toxic Multi-Nodular Goiter, the thyroid gland is usually irregular and bumpy with either solitary nodule or multiple nodules on imaging.(see the above images).

Modern Treatment of Hyperthyroidism

By 1980, treatment of Graves' Disease had evolved. New anti-thyroid drugs were developed such as PTU and Methimazole (Tapazole). Thyroid ablation with Radioactive I-131 given as an oral capsule was finding popularity. Of course, surgical thyroidectomy remained a treatment options. (29-33)

However, the original Iodine treatment remains in the hospital formulary for preparation of the Hyperthyroid Patient prior to thyroidectomy.(12-13)

In 2009, Dr Sinem Kiyici reported on the use of Lugol's Iodine in combination with anti-thyroid drugs for preparation of the hyperthyoid patient for thyroidectomy.(14)



Left Image: typical TED (thyroid eye disease) with retracted eye lids, exophthalmos, and reddened inflamed conjunctiva.

First Line Therapy With Iodine

In 2000, Dr. Jamieson reported on the successful treatment of Graves' disease in pregnancy with Lugol's iodine. (15) In 2013, Dr. Gangadharan reported on the use of Iodine as first line therapy in a child with Graves' Disease.(16)

Lithium and Iodine Combination Treatment (49-56)

Lithium carbonate (300 mg tabs) can be an effective treatment for hyperthyroidism. Dosage is usually 300 mg three times a day. Blood levels are checked to avoid toxicity. (49-56) Lithium inhibits the release of thyroid hormone by the thyroid gland. The mechanism is thought similar to that of Iodine.

Perhaps a more effective treatment for Graves hyperthyroidism is found with the combination of both Lithium Carbonate and Iodine (Lugol's) used together.(49)

Quoted from the Jonathan Wright MD Newsletter (49):

"In 1972, Dr. R Temple at the Mayo Clinic published the first clinical investigation of lithium treatment for Graves' disease. Using high-dose lithium for 10 individuals, they reported that thyroid hormone levels fell by 20-30 percent within five days.

Twenty-six years later, in a review of more than 10 successful trials of lithium therapy for Graves' disease, the authors wrote: "a small number of studies have documented [lithium's] use in the treatment of patients with Graves' disease... it's efficacy and utility as an alternative anti-thyroid [treatment] are not widely recognized..."(55)

They also note lithium's rapid effect: "Lithium normalizes [thyroid hormone] levels in one to two weeks..." Of course, they also caution that "toxicity precludes its use as a first-line or long-term therapeutic agent."

But if they'd just added [flaxseed oil](#) and [vitamin E](#) to their treatment, they would have basically eliminated the risk of toxicity. in fact, every individual (except one) whom I've treated with iodine-iodide (in the form of Lugol's Solution) and high dose lithium has had blood tests for thyroid hormone return to normal within two weeks. Their tests then stay normal as long as they use the Lugol's solution and high dose lithium." (49-56)

Once such protocol used Lithium Carbonate 300 mg three times a day for three days, then start the Lugol's Iodine 5 % solution – 3 drops three times a day. (48-56)

Lithium Induced Hand Tremor

A common adverse effect of Lithium is hand tremor, which may be alleviated with addition of [Vitamin B6 \(P-5-P\)](#). (60) Lithium toxicity may be avoided with the use of [Flax Seed Oil](#) Essential Fatty Acids, and [Vitamin E](#).

The Return of Iodine for Graves' Disease

Drs Guy Abraham, David Brownstein and George Flechas of the Iodine Project recommend Iodine for treatment of Graves' Hyperthyroidism. However, They advocate a nutritional supplement program prior to using Iodine: [Selenium](#), [Magnesium](#), [Unrefined sea salt](#) and [vitamin C](#). (22-23)

Graves' is an Autoimmune Disease

Graves' disease is an autoimmune disease in which auto-antibodies attack and stimulate the TSH receptor. As such, based on the work of [Allesio_Fasano](#), gluten sensitivity and leaky gut has been implicated in the etiology. (48) See my [previous article](#) on this.

Underlying gluten sensitivity is the common cause of leaky gut and auto-immune disease. The mechanism of molecular mimicry has been proposed with leakage of bacteria into the blood stream which invokes an immune response. The bacteria, Yersinia has been implicated in [Graves' Disease](#). Antibodies to Yersinia cross react with the [TSH receptor](#), producing hyperthyroidism by stimulating the TSH receptors in the thyroid gland.(36-42). Similarly, thyroid eye disease (TED) is the result of autoimmune attack on TSH receptors or other antigens in the extra-ocular muscles, peri-orbital adipose and connective tissue.(43-47)

Radio-Active Iodine Worsens Thyroid Eye Disease

Over the years, radioactive iodine (I-131) has enjoyed considerable popularity as a treatment for hyperthyroidism. However, Dr. Jerome M. Hershman laments in 2013 Clinical Thyroidology that radio-Iodine worsens Thyroid Eye Disease (TED).(30)

Dr. Hershmann continues with the following quote: *"It is difficult to predict how patients with Graves' disease will be treated 20 years from now, but I hope that we will have some rational therapy that is directed at the autoimmune origin and that makes our entire current armamentarium obsolete."* (30)

Obviously, there is something yet to be desired with modern treatment of Graves' Disease. Perhaps treatment with combined Iodine and Lithium is the answer (see below references (49-56)).

Addressing the Underlying Auto-Immune Cause

Modern treatment ignores the underlying autoimmune causation, and is concerned solely with controlling the hyperthyroid metabolic state with drugs (methimazole)(31), radioactive iodine and thyroidectomy.(57)

Our program addresses the underlying autoimmune cause.

- 1) Gluten sensitivity testing with anti-gliadin antibody, and Genetic testing. If positive, a Gluten Free Diet may be curative,
- 2) Extended Food Reactivity testing, and dietary modification to eliminate reactive foods.
- 3) Healing the Gut with various nutritional programs including Glutamine, digestive enzymes, probiotics, etc.
- 4) Selenium level testing and optimization. See my previous [article](#) on this.
- 5) Vitamin D3 level testing and optimization.

- 6) Low Dose Naltrexone, an immune modulator, has been found useful in autoimmune disease patients.
- 7) Control and manage hyperthyroid state by inhibiting thyroid function with Iodine, lithium and methimazole (57). In some cases Beta Blocker (atenolol, propranolol) may be required to manage tachycardia.

8) Block and Replace: Once thyroid function has been decreased sufficiently with medical treatment (Methimazole, Lithium and/or Iodine), Thyroid Hormone replacement can be started with the goal of suppressing TSH. We prefer to use natural thyroid medication (NDT) such as Naturethroid from RLC labs, rather than T4 only levothyroxine commonly used by endocrinologists and primary carer physicians. By suppressing TSH, we have seen antibodies levels decline in autoimmune thyroid cases.

7) Thyroid Eye Disease (TED) in the Graves' patient should be managed by coordinated team of physicians, endocrinologists, and ophthalmologists with specialty experience in managing TED. This typically involves a neuro-ophthalmologist, an orbital surgeon, and a strabismus surgeon. Unfortunately the usual treatments with antithyroid drugs and thyroidectomy do not improve thyroid eye disease. In fact, radioiodine therapy for Graves' disease can worsen thyroid eye disease. (43)

Buy Iodoral on Amazon: [Optimox Iodoral 180 tablets](#)

Update 5/1/15: [L-Carnitine Useful for Treating Hyperthyroidism – Carnitine is a peripheral antagonist of thyroid hormone action, not an inhibitor of the thyroid gland function.](#)

Benvenga, Salvatore, et al. "Usefulness of l-carnitine, a naturally occurring peripheral antagonist of thyroid hormone action, in iatrogenic hyperthyroidism: a randomized, double-blind, placebo-controlled clinical trial." The Journal of Clinical Endocrinology & Metabolism 86.8 (2001): 3579-3594.

[Elaine Moore: A Useful On-Line Resource](#)

Elaine Moore is a Graves' Disease expert, having gone through it herself, she has written books covering all aspects of Graves' Disease, and is strongly recommended to you. Here is the [link](#) to her web site. Left Image: Book Cover, [Graves' Disease: A Practical Guide](#) by Elaine Moore.