

Thyroid Hyperfunction - Part Four

I want to talk a little bit more about iodine and hyperthyroidism. Iodine solutions have a long history of use for hyperthyroidism in the U.S., but today, at least in the conventional paradigm, it plays only a minor role in treatment.

Giving high doses of iodine can lead to a temporary inhibition of iodine organification in the thyroid gland and reduce the output of thyroid hormone. This is known as the Wolff-Chaikoff effect. However, within two to four weeks of continued exposure to excess iodine, organification and thyroid hormone biosynthesis become normal again, and this is called escape from the Wolff-Chaikoff effect. In patients with Hashimoto's, the iodine-induced blockage of organification persists, however, beyond the two- to four-week period. They don't escape from the Wolff-Chaikoff effect, in other words, which can exacerbate hypothyroidism in those patients. In patients with Graves', the continuation of the Wolff-Chaikoff effect can actually be helpful because thyroid hormone production continues to be limited.

In addition, pharmacologic amounts of iodine may ameliorate hyperthyroidism by blocking thyroid hormone release. That said, these high doses of iodine are typically only used for the short term in the conventional paradigm, such as two weeks in cases of thyroid storm, for example 250 mg of iodine, which is a huge dose, four times a day, for a total of 1,000 mg, keeping in mind that the safe upper limit for iodine is 1,100 mcg per day. It is sometimes used in preparation for a thyroidectomy at a dose of 50 to 100 mg three times a day.

The other thing to be aware of is some studies have shown that high doses of iodine can induce hyperthyroidism in some cases. You know now that the requirement for iodine is very small. Patients do need 150 mcg per day for proper thyroid function, but in general, we want to be cautious about exceeding 300 mcg per day. Once again, unless you have specific experience in this area, I think treatment of hyperthyroidism with high doses of iodine is best left to an endocrinologist or someone who does that regularly.

Summary of immune-balancing interventions

Nutrient	Comments
AIP	Paleo diet with no eggs, nightshades, nuts
Optimize vitamin D levels	Diet, UV exposure, supplements
Glutathione	Liposomal form best; 1-2 tsp/day
Curcumin	Liposomal or Longvida form; 1-2 tsp/day or 1-2 capsules/day
EPA & DHA	1 lb. of cold-water, fatty fish per week
Probiotics	Soil-based organisms, transient commensals, lactic acid
Prebiotics	RS, soluble fiber, non-starch polysaccharides
Lifestyle	Physical activity, sleep, stress management, play, pleasure, social connection
Low-dose naltrexone (LDN)	1.5-4.5 mg; start with low dose and build slowly

This slide should also be familiar from the hypothyroidism presentation where we talked about interventions to help balance and regulate the immune system in patients with Hashimoto's, and all of those apply here as well, so you can refer again to that presentation for details. I'm not going to rehash it.

A note, though, about LDN in particular with Graves'. I've seen incredible results with it in patients with Graves', arguably better than Hashimoto's. One patient stands out in my mind, just off the top of my head. She was on methimazole for over 20 years, had significant exophthalmos, very pronounced, and other symptoms. She was convinced when she first came to see us that she would never be able to get off that drug, but she was at least open to trying a functional approach to see if she could perhaps reduce the dose. When we started to address her underlying issues, she began to become hypothyroid. Remember, this can happen because as you address the underlying issues, the dose that was required to suppress thyroid hormone production before, when she still had those issues, is now too high, and that can drop her into hypothyroidism. You need to warn patients about that as you start to implement your treatment plan. That's particularly true if you then begin to use LDN because LDN will have an even more profound effect on regulating the immune system. You want to warn them about that, and you want them to let their endocrinologist know to expect that so that they are ready to adjust the dose unless you are the one who is prescribing the PTU or the methimazole.

We addressed the underlying mechanisms, and she improved and was able to reduce her dose of methimazole, but she was still on it. We decided to start her on LDN. We started with a very low dose of 1 mg to be conservative. She became a little bit more hypothyroid, and we had to again adjust her methimazole dose. After about four months, she was able to build up to 3 mg of LDN,

which was her optimal dose, and she was able to get off methimazole completely. This is, I think, two-and-a-half years later. She has been able to maintain remission with LDN, diet, and lifestyle changes, so this may not happen in every case, but I've seen it a number of times, even in patients who have been taking PTU or methimazole for many years.

In addition to immune-regulating therapies, there are some natural agents that can be helpful in hyperthyroidism. The first is L-carnitine. It does not affect the thyroid gland directly, but high doses of 2 to 4 g per day have been shown to inhibit the entry of both thyroxine, which is T4, and triiodothyronine, which is T3, into the cell nucleus, which reduces the effects of hyperthyroidism. One RCT showed improvements in the second week of treatment using 2 to 4 g of L-carnitine daily, including reduction of goiter size, I-131 uptake, liver enzyme levels, and improvement in eye symptoms, including exophthalmos. L-carnitine has a beneficial effect on muscle function, strength, and bone mineralization, all of which can be adversely affected in Graves' disease. Hyperthyroidism depletes the body of L-carnitine and other nutrients, and doses of L-carnitine as high as 4 g daily are not associated with toxicity. The only side effect in this study was mild nausea, which passed in a few days. Acetyl-L-carnitine is the best form to supplement with, and remember, patients with hypothyroidism shouldn't take high doses of L-carnitine for this reason.

Some botanicals have also shown efficacy in treating hyperthyroidism. The first is bugleweed, or gypsywort. In one German study, 73 percent of patients with hyperthyroidism achieved euthyroid status after taking bugleweed for four weeks. However, the study was open label and funded by a company that makes a bugleweed supplement. That, of course, doesn't mean that the research is not valid, but it does raise a question mark. Another study showed positive effects of bugleweed in patients with mild hyperthyroidism. The mechanism was thought to be increased urinary excretion and clearance of T4. Finally, a study in rats showed that bugleweed reduced heart rate and blood pressure in the hyperthyroid state.

The next is lemon balm, which is a member of the mint family. It has active medicinal ingredients, including citronella, citral, tannins, and geraniol. It has a long history of use, especially in Europe, for anxiety, depression, palpitations, respiratory congestion, allergic reactions, menstrual pain, and nervousness. It has been used to mildly reduce thyroid hormone levels and symptoms that are associated with hyperthyroidism. It is thought to balance and regulate the immune system, slow pituitary function, and lower TSH levels, which in turn reduces thyroid hormone levels. There is not a lot of published research on lemon balm and hyperthyroidism, but there are a few studies out there, and I have seen good clinical results with it.

Herb Pharm has a formula called Thyroid Calming with both bugleweed and lemon balm. It also has motherwort and cactus, both of which are used in traditional medicine for hyperthyroidism, anxiety, and related symptoms. The botanicals are organic, wildcrafted, and fresh. Herb Pharm is a really good company that I rely on for botanical medicine. The dose would be one full squeeze of the dropper bulb in two ounces of water two to four times a day, and it is best taken between meals.

Summary of **treatment recommendations**

TSH	Free T4/T3	Comments
Low	Normal / high-normal (high in functional range)	Address underlying mechanisms and re-test in 3 months; if TSI high, focus on immune balancing
Low	Slightly above lab reference range	Address underlying mechanisms and use 2-4 g L-acetyl-carnitine + Thyroid Calming daily; if TSI +, focus on immune balancing and consider LDN
Low	Significantly above lab reference range	Refer to endocrinologist for further workup (esp. if TSI –) and ATD if necessary; continue addressing underlying mechanisms and focus on immune balancing (inc. LDN) if TSI +

Here is a summary of how to approach hyperthyroidism. If TSH is low and free T4 and free T3 are normal or high-normal or high in the functional range, you could address the underlying mechanisms and retest in three months. If TSI is high, you particularly want to focus on immune balancing. If TSH is low, and free T4 and free T3 are slightly above the lab reference range, you could also address the underlying mechanisms, but use 2 to 4 g of L-acetyl-carnitine plus the Herb Pharm Thyroid Calming daily. If TSI antibodies are present, focus on immune balancing, and consider LDN. If TSH is low, and free T4 or T3 are significantly above the lab reference range, this is when you would probably want to refer to an endocrinologist for further workup, unless you have experience yourself in this area. The patient may need to consider antithyroid drugs if necessary, and you can continue addressing the underlying mechanisms and focusing on immune balancing, including LDN if TSI is positive.

Okay, that's it for now. We'll see you next time.