KRESSER INSTITUTE
FOR FUNCTIONAL AND EVOLUTIONARY MEDICINE

Nutrition: Thyroid Disorders – Part 2

Let's talk first about hypothyroidism caused by nutrient deficiency. Two major causes of non-autoimmune thyroid disorders are iodine and selenium deficiency. Iodine is critical for thyroid function. It forms the backbone of thyroid hormone, and deficiency of iodine is known to cause both hypothyroidism and goiter, which is the swelling of the thyroid gland.

Iodine can be difficult to obtain, even in the context of a healthy diet. A lot of people on a Paleo type of diet are not using iodized salt. They prefer to use sea salt, and there are some reasons to do that, but the problem is, sea salt doesn't have very much iodine in it, and if the patient is not consuming sea vegetables like kelp or kombu or kome or dolce or fish heads or certain types of fish like cod, shrimp, and tuna, or dairy products, those are the main sources of iodine in the diet. If they're not consuming those foods and they're not consuming iodized salt, it's very likely that they could be iodine-deficient.

Selenium is required to convert T4 to T3; it's also required to protect the thyroid against factors that can lead to autoimmune expression, and deficiency of selenium exacerbates the symptoms of inadequate iodine. Selenium, as I just mentioned, is also important for immune health. Most people get enough selenium from food, but those with hypothyroidism might benefit from supplemental selenium on top of what they get in the diet. There are a few studies that have shown that supplementation of 200 micrograms a day for people with Hashimoto's was beneficial. On the other hand, there are some studies that have recently come out on men, not on women, but on men showing that if men have adequate selenium levels to begin with, supplementing with 200 micrograms of selenium a day for six to eight years actually led to an increase in prostate cancer risk, so that study they used toenail selenium as a way of measuring selenium status, but if you have a patient with Hashimoto's, particularly a male patient, and you're going to recommend selenium supplementation, it might be a good idea to check their selenium levels at baseline first, and then monitor those levels throughout the treatment protocol. Selenium can be found in a number of different foods; 16 of the 25 highest sources of selenium are ocean fish like tuna, halibut, sardines. Selenium is very concentrated in Brazil nuts, just two Brazil nuts per day can meet our selenium needs, and then it's also found in meat, poultry, and eggs in smaller amounts.

Let's talk a little bit about goitrogens in the food. A goitrogen is something that inhibits the uptake of iodine in the thyroid gland. Excessive intake of goitrogenic foods can contribute to thyroid conditions, especially when the background intake of iodine in the diet is low, as it often is in the US. Foods that contain goitrogens include yuca and cassava, soy, millet, sweet potatoes, broccoli, cauliflower, cabbage, Brussels sprouts, bok choy, kale, and collard greens, and goitrogenic chemicals include percolates in jet fuel; oxazolidones in paint; amiodarone, which is an irregular heartbeat arrhythmia medication; and lithium or benzodiazepines, which are used for anxiety. At low concentrations, goitrogens will decrease the uptake of iodine via the thyroid gland, as I mentioned, and so the effect of goitrogens can often be offset partially or even entirely by just taking more iodine, so something like 800 micrograms to one milligram per day.

However, exposure to large amounts of goitrogens impairs the incorporation of iodine into the thyroid hormone itself, and then even iodine that's taken up by the thyroid gland cannot be properly utilized, and no amount of supplemental iodine can overcome a large intake of goitrogenic compounds from food or chemicals for that reason. So, if you have a patient with low iodine intake, for example, they're not consuming dairy or sea vegetables and they're not consuming iodized salt, and then let's say they're having a smoothie every morning with raw kale in it, that patient may very well be headed towards a thyroid problem if they don't have one already because of their significant intake of goitrogens and their low background intake of iodine.

There are some things that you can do to reduce the goitrogenic effect of foods that contain goitrogens, however. One is to cook them. So, steaming reduces goitrogens to about a third of their original amount; boiling for 30 minutes reduces them by 90 percent. Cooking also reduces the formation of nitriles, which are another thyrotoxic compound, and nitriles are arguably more problematic than goitrogens, so cooking these foods that have these compounds is a really good idea in most cases for patients that have thyroid issues. As an interesting side note, fermentation of vegetables doesn't reduce goitrogen content; it actually increases it in some cases, so fermentation does not solve the goitrogen problem. Having said that, it's really unlikely that consuming small amounts of fermented food like sauerkraut as a condiment at one, two tablespoons a day, or a few servings of cooked cruciferous vegetables per day would have a negative impact on the thyroid if the background intake of iodine is adequate. So here are the basic recommendations, given all of that: for patients with thyroid issues, we typically would recommend not eating goitrogenic foods in their raw state very often, maybe an occasional kale smoothie with raw kale, but not on a daily basis, and if they have to have kale in their smoothie, they could steam it lightly before they put it in, then limit the consumption of goitrogenic vegetables maybe to one meal per day, if they have a significant thyroid disorder, and consume greater amounts of iodine-rich foods to counteract the effects of goitrogenic foods and consider supplementing with iodine if they're able to tolerate that. You don't want patients to completely remove goitrogenic foods from their diet because many of these foods are some of the most healthy and beneficial nutrient-dense vegetables that we have access to, so it's more a question of moderation than it is elimination.

Autoimmune thyroid diseases, whether we're talking about Hashimoto's or Grave's, are both driven by autoimmune processes, so in those cases we would typically recommend that a patient follow a diet that's best suited for autoimmune disease. So this could be an autoimmune Paleo protocol, and we would have them do it for 30 to 60 days, and then gradually reintroduce some of the foods that they removed to determine if they received any benefit. I don't believe that every patient with an autoimmune disease needs to be on an autoimmune diet protocol for the rest of their life, but I do believe that every patient should try an autoimmune protocol if they have an autoimmune disease to determine which of those foods they may be sensitive to, if any. There's also a strong link between autoimmune disease and gluten intolerance. In fact, the link is so strong that in the research literature there is a suggestion that all people with autoimmune thyroid disease be screened for gluten intolerance and vice versa. I recommend in general that most people with

autoimmune thyroid disease eliminate gluten for at least six months before trying to reintroduce it, and better yet, just eliminate it entirely. A lot of autoimmune thyroid disease patients have found that they require a 100 percent gluten-free diet in order to prevent progression of their disease and the continued destruction of thyroid tissue. They may also have to remove foods that cross-react with gluten, which could be identified with something like the Cyrex Array 4 food intolerance panel. Fifty percent of patients with celiac disease have been shown to have intolerance to casein, which is a protein in dairy products, and 30 percent continue to see symptoms even after adopting a gluten-free diet, so this suggests that there are probably other foods that are problematic for these patients, so I do recommend running Cyrex Array 4 to determine if proteins found in other foods are triggering an autoimmune reaction as well.

The autoimmune Paleo protocol involves a Paleo diet as the base but then also removes some foods which are permitted on Paleo, like eggs, nightshades, fruits and vegetables like tomatoes and peppers and spices, nuts and seeds in some cases, although it's important to understand that there's not a lot of research supporting these protocols. It's more based on empirical observations of clinicians and trial and error from a lot of people with autoimmune disease. So I'm not a big fan of overly restricted diets unless they benefit people, and so again, you can have your patients try eliminating these foods for 60 days, let's say, and then add them back in one at a time to see if they react to them, and if they don't react, there's no sign of increase in symptoms or change in lab markers or anything like that, then there's no reason to keep them out of the diet, because we want as diverse a diet as possible, but of course if they do react, then they may need to eliminate them over the short term or indefinitely.