cases, lab results revealed a low FT_3 and an increased rT_3. For these patients, we correct the metabolic and thyroid functions using only T_3 in divided doses until the rT_3 is low normal. We then continue to use only T_3 if the patient is doing well clinically. (FT_3 will usually be in the normal range while FT_4 is low.) Alternatively, if the patient still has symptoms of low thyroid, even when FT_3 is normal or high normal and rT_3 and FT_4 are below normal, we add a low dose of T_4.

After treatment with T_3 or a combination of T_3 with T_4, and after the patient is clinically euthyroid with normal values of FT_3, FT_4 and rT_3, we often find that TSH is below normal. We believe that this is because the set point for feedback of thyroid hormones has been decreased. Thus, the body acts as though the thyroid gland is over-active during the weight loss state in order to lower metabolism and prevent weight loss during caloric restriction. When thyroid function is corrected with T_3, the already decreased TSH production is turned off, just as the TSH would be if one gave thyroid hormone to a euthyroid patient. (For further discussion, see Rowsemitt and Najarian, submitted.[1])

The following case reports from our practice should help to delineate this hypothesis in actual practice. For thyroid testing, all patients are instructed not to take their morning dose of thyroid medication until after a morning blood sample. Symptoms of high thyroid are explained to the patient; the patient is advised to call our practice immediately for medication adjustment should any of these symptoms arise. Patients are also advised that a sudden increase in food intake can cause their own thyroid glands to increase hormone production, causing hyperthyroid symptoms.

Case Reports

Patient Number 1. The first patient example is a 67-year-old female; height: 5'2"; weight: 268 lbs; body mass index (BMI): 49 (range: 19-24; overweight; 25-29; obesity: ≥30). Baseline blood pressure was 110/74, blood sugar (BS) was 153 mg/dL 10 days after her first visit. Her medical problems at baseline included obesity, type 2 diabetes mellitus (DM2), high blood pressure (HTN), fatigue, depression, and asthma. Her medications included glipizide 10 mg daily, amitriptyline 50 mg daily, metoprolol 50 mg daily, furosemide 40 mg daily, potassium chloride, lisinopril 10 mg daily, Advair Discus 500/50 twice daily (bid), and montelukast 10 mg daily.

She was started on our comprehensive program. Five months after starting her weight loss treatment, she developed symptoms of hypothyroidism with constipation and fatigue. She had lost 28 lbs by this time and was having difficulty losing more weight even though she was eating less than she was before her weight loss treatment began. At the start of treatment, her FT_4 was 0.9 ng/dL (range: 0.7-1.48). At the time of her low thyroid symptoms, her FT_3 was 2.9 pg/mL (range: 1.71-3.71) and her FT_4 was 0.91 ng/dL (range: 0.7-1.48). She was then treated with thyroid hormone (desiccated thyroid with a ratio of T_4:T_3 of about 4:1) at 60 mg daily for 6 days to acclimate, then increased to 120 mg daily. Since her low thyroid symptoms were only partially improved, her thyroid hormone dose was increased to 150 mg daily 5 months later, with resolution of the constipation and fatigue. After two years on her weight loss treatment, her weight was 231 lbs. Nearly 3 years after the start of her weight loss treatment, while on 150 mg of thyroid hormone, she felt cold and constipated, with another weight loss plateau. We had just started testing for rT_3 at this point. Her labs on the 150 mg dose of desiccated thyroid were: rT_3 394 pg/mL (range: 90-350), FT_3 3.94 pg/mL (range: 1.71-3.71), and FT_4 1.24 ng/dL (range: 0.7-1.48). The task of bringing down her rT_3 was then addressed. Over a period of a few months, her desiccated thyroid hormone was discontinued and instead the patient was given gradually increasing doses of T_3 only, starting at 20 mcg daily and gradually increasing the T_3 to 60 mcg bid. Five months after starting on T_3 with increasing doses, her weight had dropped to 209 lbs. Her BP was 118/66 mmHg with pulse of 74 on lisinopril 10 mg daily, metoprolol 50 mg bid, and furosemide 40 mg daily. Instead of glipizide, she was taking metformin 500 mg bid. She was clinically euthyroid on the T_3 only. Her most recent labs on 60 mcg bid of T_3 were FT_3 3.8 pg/mL (range: 1.71-3.71), FT_4 0.64 ng/dL (range: 0.7-1.48) and rT_3 137 pg/mL (range: 90-350). Four months prior to this visit her BS was 125 mg/dl.

Comments. This example makes the important point that three years into the program, with FT_3 above normal and FT_4 in the reference range, the patient had difficulty losing weight and had low thyroid symptoms. We believe that this was due to her elevated level of rT_3. The only way to lower rT_3 in this setting is to avoid giving any T_4 (since T_4 is the