

Hypothyroidism, Particularly Associated with Weight Loss: Evaluation and Treatment based on Symptoms and Thyroid Hormone Levels

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Abstract. Famine causes adaptive changes in thyroid function which helped individuals survive during times of low food availability. These changes in thyroid function and metabolism have become maladaptive as the induced hypothyroidism associated with intentional weight loss restricts the success of diet attempts and encourages weight regain. In our previous paper^[1] we described the mechanisms and consequences behind maladaptive hypothyroidism associated with intentional weight loss. Here we give two specific patient examples of this syndrome and how the biochemical and clinical changes were managed for the clinical benefit of our patients. More broadly, we address the need to understand that there are limitations to our ability to detect every appropriate variable in any one patient, so that we do not overestimate the value of any particular lab reading in any one patient.

Keywords • Famine • Weight loss • Maladaptive hypothyroidism

Introduction

As described in our previous paper, we find that assessment of patient symptoms, free thyroxine (FT_4), free 3,5,3'-triiodothyronine (FT_3), and 3,3',5'-triiodothyronine [reverse T_3 (rT_3)] is an effective approach to treating hypothyroidism, particularly that occurring during weight loss attempts. Our main rationale is that using thyroid stimulating hormone (TSH) as the primary determinant of thyroid function is misleading because the set point for circulating thyroid hormones is lowered in many patients in a hypocaloric state. A major consequence of weight loss is a change in thyroid function which is highly adaptive in a calorically restricted environment, but we consider to be maladaptive hypothyroidism in the context of our current environment of excess high fat, high calorie food, and little need to expend energy. These changes have been documented in other studies where thyroid function and basal metabolic rate have been measured in the presence of caloric restriction in humans and animals. See Rowsemitt and Najarian^[1] for discussion and literature. A major concern of the authors is that a new era of medical treatment to control appetite and food cravings appears imminent, but that the accompanying weight loss-induced changes in thyroid function are not appreciated

by most clinicians. We are not trying to raise a patient's metabolism above normal to generate weight loss; we are merely trying to return decreased metabolism to normal, thereby allowing a patient's weight loss behaviors to produce the desired effect. Not all weight loss patients suffer this decrease in metabolism. The clinician must evaluate symptoms and appropriate laboratory values to determine if treatment is needed.

Two other issues remain in addressing thyroid problems in the hypocaloric state: (1) Most recent studies discount the value of T_3 treatment.^[2] We are taught that the prohormone T_4 is converted to adequate amounts of T_3 , the active hormone, so that there is no need to administer T_3 . T_3 , which we believe is critical for treating our patients with maladaptive hypothyroidism, is not even available in pill form in the formulary of the United Kingdom Health Care System. Only T_4 is covered for treatment of hypothyroidism; T_3 is covered only as an injectable for myxedema coma, a severe form of hypothyroidism.^[3] (2) We find that rT_3 has been discredited by most fellow clinicians. In this paper, we present our own clinical experience which demonstrates the importance of both T_3 and rT_3 for the evaluation and treatment of the hypothyroidism which occurs in many people during weight loss attempts.

In most studies of weight loss, whether with med-