

Abstract

Autoimmune thyroiditis is the most common cause of hypothyroidism in women of reproductive age and represents a chronic, progressive disorder. In clinical practice, the disease is associated not only with disturbances of the hypothalamic–pituitary–thyroid axis, but also with changes in body weight and body composition that are often difficult to interpret unequivocally. Despite the achievement of biochemical euthyroidism, many patients continue to exhibit unfavorable features of the metabolic phenotype, such as weight gain, difficulties in weight reduction, or an increased cardiometabolic risk. Classical anthropometric indices, particularly body mass index (BMI), are frequently insufficient for the assessment of the true metabolic consequences of the disease, as they do not account for fat distribution or the proportions between fat mass and fat-free mass.

The aim of this study was to analyze body composition in women aged 18–40 years with hypothyroidism due to Hashimoto's disease using bioelectrical impedance analysis, supplemented by the assessment of selected biochemical and immunological parameters.

The study included 100 women with hypothyroidism secondary to autoimmune thyroiditis, treated in endocrinology centers in Bydgoszcz. The diagnosis of Hashimoto's disease was confirmed based on the presence of anti-thyroid peroxidase (anti-TPO) and/or anti-thyroglobulin (anti-TG) antibodies, a characteristic ultrasound pattern of the thyroid gland, and a history of levothyroxine replacement therapy. Patients were divided into two groups according to the duration of hypothyroidism: ≤ 10 years and >10 years. The control group consisted of 30 healthy women with normal thyroid function and no detectable anti-thyroid antibodies. In all participants, body composition was assessed using bioelectrical impedance analysis with the seca mBCA 515 analyzer.

No significant differences in BMI or total body fat content were observed between patients with Hashimoto's disease and the control group. However, women with Hashimoto's disease exhibited a significantly greater volume of visceral adipose tissue (VAT), independent of age and BMI. This finding indicates an unfavorable redistribution of adipose tissue that is not detectable using conventional anthropometric indices. Analysis of disease duration demonstrated that patients with hypothyroidism lasting more than 10 years had significantly higher body weight, BMI, total fat mass, and greater VAT volume compared with women with a shorter disease duration. Correlation analysis revealed weak but statistically significant

associations between continuous TSH and fT4 values and relative body composition parameters. Levels of anti-thyroid antibodies, particularly anti-TG, were significantly associated with visceral adipose tissue volume and body composition parameters, while no correlations were observed with body weight or BMI.

Hashimoto's disease is associated with unfavorable alterations in body composition that do not necessarily manifest as increased body weight or elevated BMI. Of particular clinical relevance is the increased accumulation of visceral adipose tissue, observed both in women with Hashimoto's disease and in those with long-standing hypothyroidism. Disease duration proved to be a more important determinant of body composition than the current level of thyroid hormone compensation.