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CASE REPORT

Hashimoto thyroiditis after an initial graves disease: case report

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Abstract

Introduction: Hashimotos thyroiditis (TH) and Graves disease (GD) are common autoimmune thyroid disorders in medical practice; however, spontaneous transformation of GD into hypothyroidism due to autoimmune thyroiditis is uncommon, especially in children. Thus, being a rare entity, the pathophysiology remains unknown. **Methods:** Report a case of a GD quickly evolution into HT. **Case Report:** An 11-year-old girl presented with inicial symptoms of GD, evolueting into TH within a few months after her initial diagnosis and treatment. The spectrum of clinical manifestations was evidenced, as well as laboratory tests. **Discussion:** Graves disease and Hashimotos thyroiditis are opposite manifestations within the spectrum of autoimmune thyroid diseases, and migration from one pole to another may occur, but this manifestation has been rarely reported in the literature. **Conclusion:** In view of the possible conversion of a GD into a TH, monitoring of thyroid function and possible clinical manifestations in patients with GD even after initial remission with drug treatment should be considered.

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INTRODUCTION

Thyroid dysfunctions account for about 30-40% of endocrine patients, having a prevalence of 3.82% in Europe. The American Association of Clinical Endocrinologists (AACE) estimated that about 4.78% of the American population has some undiagnosed thyroid disorder, in Europe it reaches 6.6%, of which 4.94% are hypothyroidism and 1.72% hyperthyroidism[1].

The main etiology of thyroid dysfunction is autoimmune thyroid disease, which includes several pathologies, the most frequent being Graves' disease (GD) and Hashimoto's thyroiditis (HT), causing hyperthyroidism and hypothyroidism, respectively. The evolution of a condition from hyperthyroidism to hypothyroidism in young people, in thyrotoxicosis , is considerably rare, reaching 2.7% after 2 years of treatment with methimazole . However, hypothyroidism in patients with previous hyperthyroidism is more commonly found secondary to treatments such as radioactive iodine and thyroidectomy , occurring in 66.2 and 75% of cases, respectively[2].

On the other hand, the transition from hyperthyroidism due to GD to hypothyroidism due to HT is still poorly portrayed and understood in the literature, some authors start to consider autoimmune thyroid diseases as a spectrum of diseases, with GD and HT being opposite poles of this spectrum.

The objective of this study was to describe a case of a child with GD hyperthyroidism with rapid evolution to TH hypothyroidism, highlighting the main characteristics of the disease and the social impacts generated as a result of the pathology, allowing the expansion and optimization of studies about its therapy and prognosis.

METHODOLOGY

The present work is in compliance with Resolution 196/96 of the National Health Council, passed the evaluation of the Human Research Ethics Committee (CEPSH) and was approved by the Certificate of Presentation for Ethical Assessment (CAAE) under number 11434919.9 .0000.5219

The case report consisted of a phenomenological and descriptive research, with a qualitative and longitudinal approach, and the data collection was carried out through the analysis of the medical records and exams of the patient with hypothyroidism, at the Intermunicipal Health Consortium of West Paraná (CISOP).), in the city of Cascavel. The bibliographic technique was scientifically based on articles found in MEDLINE, PUBMED, and SCIELO databases, as well as updated literature describing the aforementioned pathology.

CASE REPORT

MFSC, female, sought care at the Intermunicipal Health Consortium of the West of Paraná (CISOP) in the city of Cascavel-Paraná in 2016, aged 11 years and 3 months, complaining of eye protrusion on the left and feeling of pressure in the same, in addition, he complained of mild irritability, without other symptoms. Maternal grandmother had thyroid pathology which she could not specify, without other relevant data. Physical examination showed bilateral exophthalmos, more pronounced on the left, and goiter, bilateral Tanner P1M2 staging, mean height for age (148.5cm), weight at the 25th percentile (32.4kg). Initial laboratory tests confirmed thyrotoxicosis by DG, and treatment with Thiamazol 10mg/day and Propranolol 40mg/day. Table 1 shows the initial laboratory values, as well as their evolution during treatment.

After 4 months of treatment, the exophthalmos improved with persistent goiter and elevation of serum TSH levels (28.63 mU /L), and the dose of Tiamazol was reduced to 2.5 mg daily and Propranolol was discontinued . She returned after 3 months of medication adjustment in euthyroidism, and the dose of anti-thyroid medication in use was maintained (Table 1). After 10 months of treatment, she was euthyroid with normalization of serum levels of TRAB (1.50 IU/L) and the drug treatment was suspended.

Anti-thyroid medication treatment , the patient remained in euthyroidism, asymptomatic, only with an increase in anti-peroxidase antibody (> 600 IU/ mL) and normal TRAB (1.67 IU/L) – Table 1. It started with prostration, apathy, fatigue and increased goiter 9 months after discontinuation of Tiamazol , laboratory tests performed at that time confirmed the diagnosis of hypothyroidism due to Hashimoto's thyroiditis (TSH 76.27 mIU / mL ; anti-TPO > 600 IU/ mL , anti-thyroglobulin 1146 IU/ mL and TRAB 0.57 IU/L), and levothyroxine sodium 75 mcg was started. The minor evolved with normalization of thyroid function, maintaining the use of Levothyroxine until the present moment.

DISCUSSION

Antithyroid drug (ATD) treatment and follow-up for hyperthyroidism due to GD. Hyperthyroidism is a hypermetabolic state caused by increased levels of free T3 and T4 in the circulation resulting from an overfunctioning of the thyroid gland. GD is the most common cause of hyperthyroidism, being an autoimmune disease characterized by the presence of anti-TSH receptor antibodies (TRAB), leading to an autonomous stimulation in the production and release of thyroid hormones by follicular cells[3]. Thyrotoxicosis is characterized by a clinical syndrome resulting from excess thyroid hormones. The main symptoms are: Nervousness, weight loss, tremors, palpitations, nausea and vomiting[4].

An often overlooked cause of thyrotoxicosis is Hashitoxicosis , a transient thyrotoxicosis caused by destructive inflammation of the thyroid follicles due to TH, causing thyroid follicle damage and excessive release of stored hormones, this

Table 1. Initial and evolving laboratory tests during treatment.

	Initial	4 months of Thiamazol 10mg	3 months of Thiamazol 2.5mg	10 months of treatment	5 months without treatment	9 months without treatment	2 months on levothyroxine
TSH	<0.02	28.63	1.558	1.76	2.396	76.277	2.583
T4 Free	2.29	0.58	1.25	1.22	1.12	0.39	1.51
T3 Free	2.86	-	-	-	-	-	-
total T3	-	122	-	-	-	-	-
WORK	5.65	-	1.47	1.50	1.67	0.57	0.30
Anti-TPO	53.36	-	74.8	-	> 600	> 600	>1000
Anti-thyroglobulin	322	-	30	-	-	1.146.0	499

Reference of laboratory tests: TSH: 0.4-5.2 mU /L; T41: 0.7–1.8 ng / dL; T3l: 2.0 - 4.4 pg / mL; Total T3: 94 – 240 ng / dL; TRAB: less than 1.75 IU/L; Anti-TPO: less than 35 IU/ mL; Anti-Thyroiglobulin: less than 115 IU/ mL.

disorder is expected to spontaneously remit or progress to hypothyroidism[5].

In this report, the patient had TRAB and anti-TPO positive with suppressed TSH, confirming GD hyperthyroidism. Graves' disease is a diffuse hyperstimulation of the thyroid through immunological factors, its incidence is low reaching 3/100,000 in adolescents with a tendency to increase with age, affecting more girls in a ratio of 9.7/1 boy[6]. The treatment of choice was thiamazole , which kept the patient clinically and laboratory stable for 10 months. This medication is the first line of treatment for hyperthyroidism, being classified as ATD, with other methods of therapy such as radioiodine and thyroidectomy being second line[2].

After 10 months of treatment with ATD, the patient remained in euthyroidism by laboratory evidence for 5 months and after 9 months of discontinuation of the medication, she returned to the clinical consultation and laboratory tests in hypothyroidism, with altered anti-thyroglobulin and anti-peroxidase antibodies , confirming thyroiditis. autoimmune disease (TH) and maintaining a negative TRAB. Hypothyroidism is a syndrome resulting from a deficiency in the production or action of thyroid hormones, resulting in reduced metabolism and impairment of biological activities dependent on the action of these hormones[7]. In children, the most common cause is HT, with a prevalence of 1-2% and a ratio of 3 girls to 1 boy, and its relationship with human leukocyte antigens is well documented (HLA-DR3, HLA-DR4, HLA- DR5)[8]. HT can be diagnosed in the laboratory by an increase in TSH with the presence of positive anti-TPO and anti-thyroglobulin antibodies[9].

Although initially autoimmune thyroid diseases were considered different, currently GD and HT represent opposite outcomes of the same range of autoimmune pathophysiological processes. In HT, the predominance is of the Th1 cellular response forming a lymphocytic infiltrate , favoring cellular immunity and the development of cellular apoptosis. In GD, there is a predominance of Th2 cytokines, favoring humoral immunity with increased production of autoantibodies by B lymphocytes. The increased concentration of immunoglobulin G or Th2 cytokines induce the expression of anti-apoptotic molecules , protecting thyrocytes against apoptosis in the DG[10].

McLachlan suggests a possible immune relationship between a DG and a HT, in which excessive thyroid stimulation induces damage to the thyroid, exposing antigens with thyroglobulin and thyroperoxidase (TPO), associated with lower populations of regulatory T cells would decrease self-tolerance to self antigens. thus producing anti-thyroglobulin and anti-TPO antibodies[11].

In a literature review, six reports of children were found (Table 2), in which they presented classic symptoms of hyperthyroidism, with subsequent laboratory diagnosis of GD, being treated with ATD for a period of 1.5 to 4 years. During treatment, an increase or persistence of values above the reference of Anti-TPO and Anti-thyroglobulin antibodies was found, even after normalization of TRAB. Turner syndrome was reported in two patients, and during treatment another patient was diagnosed with type 1 diabetes mellitus. In the follow-up during treatment, two patients developed subclinical hypothyroidism, in the others no clinical hypothyroidism was reported.

The prevalence of GD in the child population reaches 0.02%[12] and the evolution from HT to GD is 4%[13]. However, the frequency and prevalence of GD progression to TH in children is still unknown.

FINAL CONSIDERATIONS

The present case report alerts to the possibility of the conversion of hyperthyroidism into hypothyroidism within the spectrum of autoimmune thyroid diseases, an occurrence that is still little reported and studied. Therefore, the need to monitor patients with GD hyperthyroidism even after the initial remission with drug treatment is emphasized, for sudden changes in symptoms. The hypothesis of conversion to hypothyroidism should always be kept in mind, thus avoiding rapid clinical decompensation.

Table 2. Series of cases reported in the literature.

Cases	Age (years) / sex	Time of treatment with ATD (years)	post-normalization anti-TPO	post-normalization anti-thyroglobulin	Pre-treatment comorbidities	Post-treatment comorbidities
1	5.5 / F	4	>600	1039	-	-
2	6.5 / F	4	302.9	137.4	-	DM1 / subclinical hypothyroidism
3	13.5 / NR	3	169.4	381	-	-
4	16.5 / F	1.5	18.77	431.3	-	subclinical hypothyroidism
5	11 / F	1.5	>600	2043	Sd . turner	-
6	16.5 / F	1.5	248.8	1913	Sd . turner	-
Current Affair	11 / F	0.83	>600	1146	-	Hypothyroidism

Cases 1 to 6 reported by Smyczyńska et al. (2014)[13].

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