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Case Report

A 10-year-old girl with red eyes and hypothyroidism

Zahra Ataee[1], **Saeed Shokoohi-rad**[2], **Saman Soleimanpour**[3*]

[1]Department of Internal Medicine, School of Medicine, Mashhad University of Medical Sciences Mashhad, Iran
[2]Eye Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
[3]Antimicrobial Resistance Research Center, Mashhad University of Medical Science, Mashhad, Iran

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***Corresponding authors:**
Saman Soleimanpour, Tel: (+98) 9126590092, Fax: (+98) 37112596, Email: Soleimanpours@mums.ac.ir

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Abstract

Objective: Hypothyroidism has many causes and manifestations in children. One of the causes is autoimmunity, which is known as autoimmune thyroiditis or Hashimoto thyroiditis. Pseudotumor cerebri is a rare manifestation of Hashimoto thyroiditis. Here we report a 10-year-old girl with asymptomatic papillary edema who was treated with levothyroxine and acetazolamide.

Case Presentation: A 10-year-old girl suffered from left eye trauma while playing volleyball and went to an ophthalmology center due to redness in the same eye. During the examination, they noticed a bilateral optic disc swelling without ocular inflammation and the other eye examination was within normal limits. Encephalopathy may rarely occur during autoimmune thyroiditis, which is known as Hashimoto encephalopathy, and it is stated that the autoimmune disorder is not related to the thyroid dysfunction characterized by the symptoms of decreased level of consciousness and seizures.

Conclusion: The diagnosis of hypothyroidism in children is usually made by examining the thyroid-stimulating hormone (TSH), and T4 in which TSH is elevated and T4 is decreased as in our patient.

Keywords: Hypothyroidism, thyroiditis, Pseudotumor cerebri

Introduction

Hypothyroidism has many causes and manifestations in children. One of the causes is autoimmunity, which is known as autoimmune thyroiditis or Hashimoto thyroiditis. Its clinical symptoms include short stature, delayed puberty, having disabilities at school, lethargy, cold intolerance, constipation, skin dryness, hair loss, swelling, myalgia, and fluid retention that is manifested as weight gain.

The rare syndrome reported in Hashimoto thyroiditis is Hashimoto encephalopathy, which is known by the symptoms including cognitive impairment, consciousness disorder, hallucination, dementia, seizure, myoclonus, tremor, and hyperreflexia. Pseudotumor cerebri is a rare manifestation of Hashimoto thyroiditis. Here we report a 10-year-old girl with asymptomatic papillary edema who was treated with levothyroxine and acetazolamide.

Case Presentation

A 10-year-old girl suffered from left eye trauma while playing volleyball and went to an ophthalmology center due to redness in the same eye. During the examination, they noticed a bilateral optic disc swelling (Figure 1) without ocular inflammation and the examination of the other eye was within normal limits. Spectralis retinal nerve fiber layer optical coherence tomography (RNFL OCT-Heidelberg Germany) was performed and significant peripapillary edema was confirmed in this case (Figure 2). Typical enlargement of the blind spot related to papilledema was also noticed in the visual field (Humphrey-Zeiss) (Figure 3).

The patient was born at the gestational age of 34 weeks and with the birth weight of 1400 g. The baby's growth and development were normal after birth. The patient had no history of headache, nausea, vomiting, dizziness, and no decreased level of consciousness. Imaging procedures were performed for the patient. The patient was suspected of increasing ICP (intracranial pressure), and thus, was referred to the neurologist. The increased signal in the bilateral retrobulbar optic nerves was reported in the brain MRI, which corresponded to cerebrospinal fluid (CSF) surrounding bilateral optic nerves in papilledema (Figure 4).

Then lumbar puncture was performed, by which the CSF pressure was reported 30 mm Hg and CSF volume reduction was done for the treatment. The patient's laboratory tests are listed in Table 1. According to the performed examinations, imaging, and tests, the patient was treated with levothyroxine and acetazolamide with a

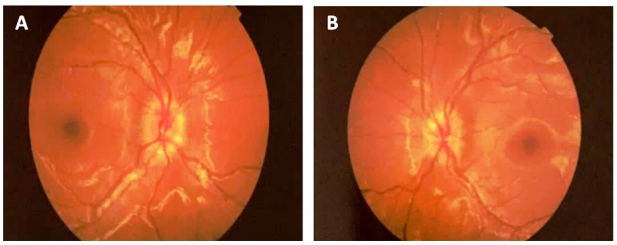

Figure 1. Bilateral optic disc swelling in fundus photography.

diagnosis of hypothyroidism and increased CSF pressure. After 3 months of treatment, the patient was re-examined. The patient's laboratory tests after treatment can be observed in Table 2. Papilledema showed significant improvement and the lab data returned to normal. Due to the good improvement of ocular complications for the patient, it was recommended to continue the treatment of hypothyroidism and follow-up the case.

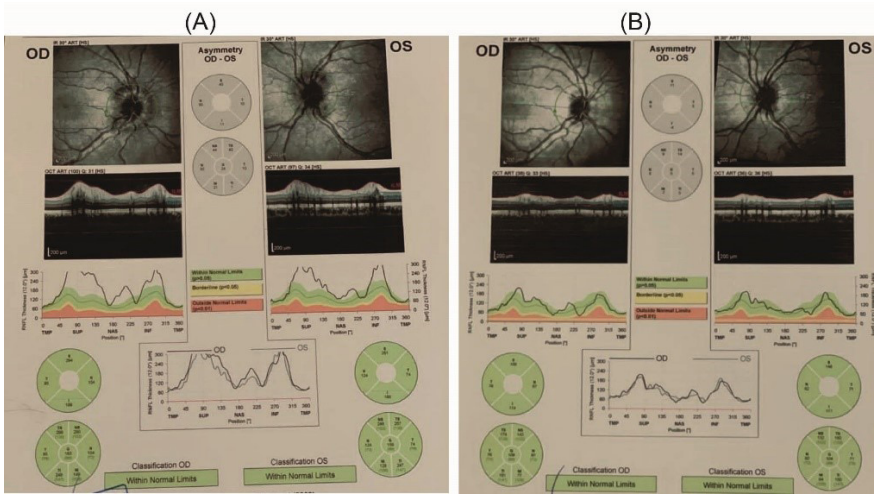

Figure 2. (A): Peripapillary nerve fiber edema in RNFL OCT, (B): After medical treatment, RNFL thickness significantly decreased.

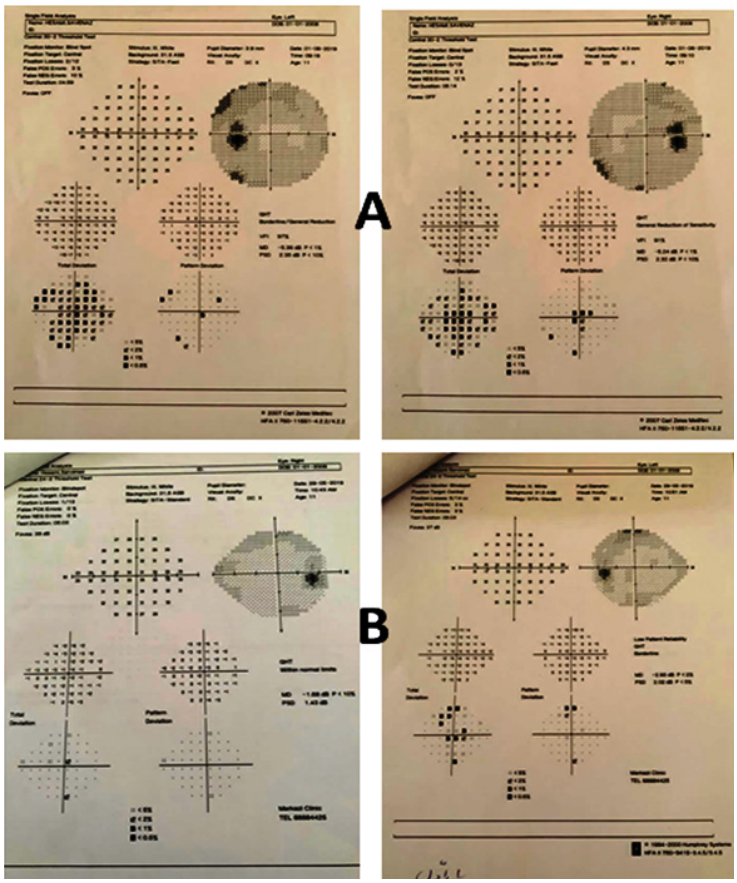

Figure 3. (A) Enlargement of bilateral blind spot in visual field, (B) After successful medical therapy visual field defect disappeared.

Figure 4. Brain MRI shows fluid surrounding bilateral optic nerves.

Table 1. The biochemical test before treatment with levothyroxine

Test	Result
WBC	6.2 *1000 µL
RBC	5.2 M/µL
Hb	13.9 g/dL
CT	41.9%
MCV	79 femtoliter
MCH	26.3 pg
Nut	49%
Lymph	43%
Mono	4%
Eosinophil	3%
Basophil	1%
PLT	331*1000 /mm^3
ESR	5 mm/h
TSH (CL)	19.4 micIU/mL
T4 (CL)	5.4 mcg/dL
T3 (CL)	1.2 ng/ml
FANA (immunofluorescence)	Negative (1/20)
Anti TTG (Ig A)	1.8 AU/mL
Anti-ds DNA (Ig G)	10.3 IU/mL
CRP	2.2 mg/L

Table 2. Lab data after treatment with levothyroxine

Test	Result
TSH (CL)	3.7 micIU/mL
T4 (CL)	96 ng/dL
T3 (CL)	8.7 mcg dL
TPO Ab (Microsomal Ab)	475 IU/mL

Discussion

The most common type of thyroid dysfunction in children is hypothyroidism and most often autoimmune thyroiditis or Hashimoto thyroiditis (1). The symptoms of this type of acquired thyroiditis are mostly in the form of short stature (2), delayed puberty, having disabilities at school, cold intolerance, constipation, skin dryness, hair loss, swelling, myalgia, and fluid retention. In the physical examination, 39.5% of patients with autoimmune thyroiditis had a large thyroid gland (3), which was normal in our patient.

Based on the lab data, there was occasionally normocytic or macrocytic anemia and hyponatremia, which were not present in our patient. There may be a large sella turcica in the primary hypothyroidism in the brain MRI (4) that was not seen in our patient. The most common cause of hypothyroidism in children is autoimmune thyroiditis or Hashimoto thyroiditis, which was also diagnosed in our patient. Hashimoto thyroiditis is more common in girls than boys (3,5,6). The study conducted by Hollowell et al. concluded that 6.3% of the patients had anti-TPO positive (7), which was also positive in our patient. The test was twice as positive in the females compared to males.

Conclusion

Encephalopathy may rarely occur during autoimmune thyroiditis, which is known as Hashimoto encephalopathy, and it is stated that the autoimmune disorder is not related to the thyroid dysfunction (8,9) characterized by the symptoms of decreased level of consciousness and seizures. The diagnosis of hypothyroidism in these children is usually made by examining the thyroid-stimulating hormone (TSH), and T4 in which TSH is elevated and T4 is decreased as in our patient.

Authors' contributions

All authors contributed to the study conception and design. Case preparation, data collection and analysis were performed by ZA. The first draft of the manuscript was written by SSR and SS and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Ethical issues

The study was approved by the Research Ethics Committee of the Mashhad University of Medical Sciences (MUMS).

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