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CASE REPORT

A Case Report on A Rare Presentation of Hashimoto's Thyroiditis in a Child

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ABSTRACT

Hashimoto's thyroiditis [HT], first described by Hakaru Hashimoto in 1912, is the leading cause of hypothyroidism in children. It is an autoimmune disorder in which the thyroid gland is attacked by immune cells and antibodies, often presenting with vague symptoms. Early identification in pediatric patients is essential to prevent developmental and metabolic issues. HT is the main cause of acquired hypothyroidism and goitre in children and adolescents, particularly in iodine-deficient regions. This case report describes a 9-year-old boy diagnosed with HT, who exhibited unusual symptoms such as behavioural changes and subtle physical findings, despite having no significant medical history and normal developmental progress. Physical examination showed stable vital signs without acute distress. Diagnostic procedures, including fine needle aspiration cytology [FNAC] and neck ultrasound, confirmed HT with bilateral cervical lymphadenitis. Laboratory tests revealed low free thyroxine [FT4], elevated thyroid-stimulating hormone [TSH], and high antithyroid peroxidase [TPO] antibodies. The patient was treated with thyroxine replacement and medications for symptom relief, responding well to the treatment. This case underscores the importance of timely care, thorough diagnostic evaluation, and considering HT in children with non-specific symptoms.

Keywords: Hashimoto's thyroiditis [HT]; Hypothyroidism; Paediatric autoimmune thyroid disease; Antithyroid antibodies; Levothyroxine

INTRODUCTION

Hashimoto's thyroiditis is the leading cause of hypothyroidism in children and adolescents, characterized by chronic lymphocytic infiltration of the thyroid gland, which results in progressive thyroid dysfunction[1]. In iodine-deficient regions, it is also the most common cause of acquired hypothyroidism and goitre in this population[2]. Globally, however, iodine deficiency remains the primary cause of hypothyroidism[3]. Clinical presentation can vary, including asymptomatic goitre, typical hypothyroid symptoms, and less commonly, signs of hyperthyroidism[2]. The pathophysiology involves the production of antithyroid antibodies that target thyroid tissue, leading to fibrosis. Diagnosing HT can be delayed as the clinical course progresses slowly. Typical laboratory findings include low free thyroxine (FT4), elevated thyroid-stimulating hormone (TSH), and high levels of antithyroid peroxidase (TPO) antibodies. In some cases, hyperthyroid-like symptoms and lab results may appear early due to intermittent thyroid cell death. The first-line treatment is oral levothyroxine sodium[3].Untreated hypothyroidism carries risks such as hypertension, cardiovascular disease, heart failure, hypercholesterolemia, and, in pregnant women, increased risk of birth defects. Myxedema, a rare but potentially life-threatening complication, can also occur[4]. This case report highlights the importance of a multidisciplinary approach in the early diagnosis and management of paediatric Hashimoto's thyroiditis.

CASE REPORT

Patient Profile

- **Age / Gender:** 9-year-old / male child.
- **Presenting Symptoms:** The patient presented with 4 days of fever, cough and cold along with one episode of vomiting and headache, the parents of child reported with swelling of lymph nodes for the child as well.
- **Past Medical History:** No significant medical history for the child. The paternal grandfather had died four

years back due to bronchial asthma complicated by pulmonary tuberculosis.
- **Developmental History:** Normal growth and development (no developmental delays).
- **Immunisation History:** The child was immunized till date.

Physical Examination

- **General appearance:** The child was conscious, awake, alert and afebrile.
- **Vital signs:** Stable. (HR – 102 bpm, RR- 20 bpm, SpO_2 – 98% saturation under room air, BP -110/78 mmHg).
- **Thyroid Examination:** A diffusely enlarged swelling in anterior aspect of neck 7x5 cm which moves on deglutition.

Laboratory Investigations

Thyroid Function Tests

- TSH: 20.21 mIU/ml (Normal: 0.5–5.0 mIU/L).
- Free Thyroxine (FT4): 0.307 ng/dL.
- FT3 – 3.16 pg/ml.

Thyroid Antibodies

- Anti-thyroid peroxidase (anti-TPO) antibodies: 12.78 mIU/mL.

Other Investigations

- Other blood tests were found to be within normal limits.
- **Peripheral blood smear:** Normal.
- **FNAC thyroid** – Revealed the signs of **Hashimoto's Thyroiditis** and left cervical nodes showed muscle fibres against a backdrop of haemorrhage.
- **CRP, NS1 antigen and IgM assays** - negative.

Ultrasound Thyroid Findings

Ultrasound Neck imaging revealed thyroiditis with bilateral cervical lymphadenitis.

Diagnosis

Based on clinical presentation, laboratory findings, and positive anti-thyroid antibodies, a diagnosis of Hashimoto's thyroiditis was confirmed.

Management

- **Thyroid Hormone Replacement:** The patient was initiated on **thyroxine** at 100 mcg/day, titrated according to follow-up of thyroid function tests.
- **Dietary and Lifestyle Counselling:** The family was educated on a balanced, iodine-rich diet and the importance of regular exercise to manage weight and support growth.
- **Symptomatic treatment:** 500 mg Paracetamol (for fever and headache), 2 mg ondansetron for vomiting, chlorpheniramine maleate for cough and cold.
- **Prognosis for the patient** was good (response to therapy is found satisfactory).

DISCUSSION

In children and teenagers, the most frequent cause of autoimmune thyroid disease is Hashimoto's thyroiditis (HT). T cells react with thyroid antigens and secrete inflammatory cytokines, which are crucial in the pathophysiology of illness. Thyroid peroxidase, thyroglobulin, and the TSH receptor blocking antibodies are present in patients with HT thyroiditis. Thyroid follicular cell destruction brought on by T cells is the primary cause of these autoantibodies. It causes persistent inflammation by attacking the thyroid gland with the body's immune system.[5] In this case, the patient displayed symptoms like fever, cough, cold, vomiting, and headache that are frequently linked to viral infections. Ergul AB, Dursun et al says that measuring antithyroid antibodies ideally, TPO Ab will confirm that hypothyroidism is caused by HT.[6] The thyroid gland exhibits typical ultrasonography abnormalities in the HT patient, including scattered hypo and hyperechogenicity. Our patient was diagnosed with hypothyroidism (HT) due to greater titers of antithyroid antibodies and with bilateral cervical lymphadenitis was verified by a neck ultrasonography.[7]

The first instance of this type was reported by Papi and Ezzat[8]. The patient was a male 59-year-old who had symptoms compatible with SAT. Three months after presenting with high titers of antithyroid antibodies, which suggested an autoimmune thyroid illness, the patient became obviously hypothyroid. Similarly, Minciullo et al[9] reported a case of a young female with ultrasonographic characteristics and an HLA genotype favouring Hashimoto thyroiditis who acquired hypothyroidism years later. The main theory in each of these situations was that an infection that served as a trigger created autoimmunity toward the thyroid gland, which in turn caused autoimmune thyroid disease[9] Our patient experienced a fever, cough, cold and swelling of neck. Lymphadenopathy was present to the patient one month ago. These features made to diagnose autoimmune thyroiditis. Benvenga et al.'s sufficient evidence on the homologies between bacteria and thyroid antigens support the idea that autoimmune thyroid disorders can be brought on by viral or bacterial infections[10]. It has also been established that a number of susceptibility genes for autoimmune thyroid illness have a role in the main pathways that underlie this organ-specific autoimmunity[10]. The goal of the treatment plan was to reduce symptoms and employ thyroxine replacement therapy to treat the underlying thyroid problem. The patient showed stability in vital signs and no acute distress, indicating a good response to the medication. Timely diagnosis and treatment with levothyroxine

are critical in preventing developmental delays, growth retardation, and other metabolic disturbances associated with hypothyroidism[11]. Early intervention ensures better cognitive outcomes and normal growth trajectories.

CONCLUSION

This case highlights the need to consider Hashimoto's thyroiditis in paediatric patients who present with non-specific symptoms and normal developmental milestones. Timely and accurate management of Hashimoto's thyroiditis through early diagnosis is crucial to ensuring optimal growth and development in children while preventing long-term complications. Future guidelines, especially in regions with a high prevalence of autoimmune thyroid disorders, should recommend routine thyroid function screening for children displaying vague symptoms such as fatigue, neck swelling, or unexplained weight changes. Ongoing monitoring of thyroid function is also vital to adjust treatment dosages as required. Additionally, further research is needed to explore the role of infections as potential triggers for autoimmune thyroiditis and to better understand the genetic and environmental factors influencing the development of HT in young populations. Insights into these factors could lead to earlier detection and more effective prevention strategies, ultimately improving patient outcomes.

Conflict of Interest

The authors declare that they have no conflicts of interest.

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Ethical approval

A written informed consent was obtained from the legal guardian of minors for the publication of this report.

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