



Case Report

Autoimmune polyglandular syndrome type 2: A case report

Agyad Bakkour^{a,*}, Mohammed Deeb Zakkor^b, Lina Taha Khairy^c, Rostom Horo^d,
Eman Mohammed sharif Ahmed^e, Hachem Alhussein^b

^a Faculty of Medicine, Al-Baath University, Homs, Syria

^b Department of Endocrinology, Aleppo University Hospital, Aleppo, Syria

^c The National Ribat University, Al Ribat, Sudan

^d Department of Gastroenterology, Aleppo University Hospital, Aleppo, Syria

^e Departments of Obstetrics and Gynecology, Nile Vally University, Atbra, Sudan

ARTICLE INFO

Keywords:

Autoimmune polyendocrine syndrome
Autoimmune Addison's disease
Schmidt syndrome

ABSTRACT

Introduction: Autoimmune polyglandular syndrome 2 (APS 2) is immune-mediated destruction that affects two or more endocrine glands and causes a constellation of multiple glands insufficiencies.

Case presentation: we reported a rare case 9 years old male diagnosed with APS 2; he had adrenal insufficiency three years ago due to leak adherence to hydrocortisone. He was admitted to the hospital for adrenal crises after hemodynamic stability; laboratory evaluation showed that he had Hashimoto's thyroiditis, celiac disease, and the glutamic acid decarboxylase antibody (GAD) Anti-islet cell antibodies were positive, so he was also pre-disposed to DM 1 later.

Discussion: APS 2, also known as Schmidt's syndrome, is usually defined by the occurrence of the same flu-drocortisone or more of the followings: primary adrenal insufficiency (Addison's disease), Grave's disease, primary hypothyroidism, type 1 diabetes mellitus, celiac disease, and pernicious anemia.

Conclusion: This case report underlines the importance of early recognition and treatment of acute endocrine diseases and the necessity to investigate pediatric patients with autoimmune diseases for coexisting conditions.

1. Introduction

Autoimmune polyglandular syndrome type 2 (APS-2) is defined as the occurrence of Addison's disease with autoimmune thyroid disease or type 1 diabetes mellitus [1]. It is the most common immune endocrinopathy syndrome and was described for the first time in 1926 as a disease where Addison's disease concurrently occurred with chronic lymphocytic thyroiditis [2]. Chronic autoimmune aggressions can potentially affect physiological processes in the infected tissue, leading to changes in specific organ function, as seen in GD patients [3] Alopecia, vitiligo, celiac disease, and autoimmune gastritis with vitamin B12 deficiency are all illnesses that damage non-endocrine organs and are commonly found in these disorders [4,5]. APS type 2 occurs most often in middle-aged females and is rare in children. The diagnosis of each syndrome component is confirmed by screening for disease-specific immune antibodies. Families with PAS II frequently have silent auto-antibodies, so antibody testing might help anticipate the onset of autoimmune endocrine illnesses in the future(5). Individual disorders dictate

the treatment of the polyendocrine autoimmune syndromes, so the lifelong use of minerals, vitamins, blood work, hormonal replacement therapy, and psychosocial support are required. Dietary guidelines for polyglandular autoimmune syndrome type II depend on its presentation (Table 1). In this present report, a prepubertal male patient with Hashimoto's disease, Addison's disease, celiac disease, and positive autoimmunity for type 1 diabetes.

1.1. Case presentation

A 9-year-old male patient attended Aleppo University Hospital complaining of hypotension, abdominal pain, vomiting, and diarrhea. The patient's prior medical history was adrenal insufficiency for three years treated. Still, he didn't take the appropriate dose when he had the flu, so he entered an adrenal crisis. We accepted the patient in the hospital, performed rehydration, replaced fluids and electrolytes, and gave him hydrocortisone at 50 mg every 8 hours. His pressure increased, and his hemodynamic state was stabilized, so we gradually withdrew the

* Corresponding author.

E-mail addresses: agyadbakkour9@gmail.com (A. Bakkour), Mohammedzakour12345@gmail.com (M.D. Zakkor), Lina.t.khairy@gmail.com (L. Taha Khairy), rrstom94@gmail.com (R. Horo), Emey1003@gmail.com (E. Mohammed sharif Ahmed), Hachem197@YAHOO.FR (H. Alhussein).

<https://doi.org/10.1016/j.amsu.2022.103742>

Received 16 March 2022; Received in revised form 6 May 2022; Accepted 8 May 2022

Available online 16 May 2022

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Table 1

Dietary guidelines for polyglandular autoimmune syndrome type II.

The patient	The Diet
diabetic and underweight	institute a 2000-calorie (minimum) diabetic diet.
diabetic and overweight	institute an 1800-calorie diabetic diet, preferably with low salt, low cholesterol, and low saturated fat.
Addison disease	institute a high-sodium, low-potassium diet until electrolytes are controlled with mineralocorticoid therapy.
celiac disease	consult a dietician for a gluten-free.

dose of hydrocortisone. After four weeks, we requested comprehensive laboratory investigations, where we found elevated thyroid-stimulating hormone and positive thyroid peroxidase antibodies, so Hashimoto's thyroiditis was diagnosed. We also found a decrease in calcium, vitamin D, iron, magnesium, and hemoglobin (Table 2).

Furthermore, the patient was unable to see well at night, so we consulted the ophthalmology department and diagnosed night blindness by examining the retina, and this is consistent with vitamin A deficiency. The family noticed that there was a decrease in weight and no increase in height in their child during the past two years, which raised the suspicion of malabsorption, so we implanted stools to check for parasitic infections and malabsorption, but the results were negative. There was also a decrease in insulin growth factor 1 (19.5 L), so we did a clonidine induction test for growth hormone, and the result was typical; this negates the deficiency of growth hormone and explains the decrease in insulin growth factor due to malnutrition. All of the above raised the suspicion of malabsorption due to immune disease, so we asked for tissue transglutaminase IgG and IgA titration, and the result was positive. To confirm the diagnosis of celiac disease, We took a biopsy of the small intestine and sent it for histopathological examination.

Small bowel mucosa showing denes chronic inflammation with intraepithelial lymphocytes and reactive lymphoid follicles suggestive of march IIIA.NO crypt abscess, granulomas, or neoplastic changes were seen, but the autopsy picture is not available. In addition, we asked for an x-ray of the left wrist for bone age, and there was a three-year regression in bone age. According to the national center for chronic disease prevention and health promotion for height and weight, there are more than two standard deviations. By conducting oral tests to diagnose diabetes, the results were negative. Because the patient suffers from more than one immune disease, we examined Anti-Glutamic Acid Decarboxylase (9 IU/ml), Anti-islet cell antibfludrocortison, and the result was positive, refers to stage1 of type I diabetes mellitus. The treatment was by giving hydrocortisone at a dose of 10 mg in the morning and 5 mg in the afternoon for the management of adrenal insufficiency and giving 50 mg of thyroxine for the management of

Hashimoto's thyroiditis; we gave intramuscular vitamin D at a dose of 50,000 units per week for a month, then we gave a preventive dose of 1000 units per day. To manage celiac disease, we were recommended to follow a gluten-free diet. For diabetes preparedness, we recommend that diabetes tests be done every year. The patient was followed up within six months, where there was an improvement in the patient's general condition, as there was an improvement in weight and an increase in height.

2. Discussion

APS 2, also known as Schmidt's syndrome, is usually defined by the occurrence of the same fludrocortisone or more of the followings: primary adrenal insufficiency (Addison's disease), Grave's disease, primary hypothyroidism, type 1 diabetes mellitus, celiac disease and pernicious anemia [6–8]. APS-2 is 1 in 20,000, occurs more frequently in women with a 1:3 male: female ratio, and has a peak incidence at ages 20–60 years [9], while it is rare in children [10]. Diagnosing four immune diseases(hypothyroidism, Addison's, celiac, and positive autoimmunity for type 1 diabetes)in a 9-year-old male is rare.

By comparing our case with similar documented cases in the literature, we found that Olga Gumieniak MD et al., 2003(11) reported a 31-year-old man with nausea, anorexia, and weakness for six days. Physical examination revealed that the patient had a blood pressure of 100/60 mm, Hg, and a pulse of 84 beats/min. He had mild periorbital edema and dry mucous membranes. Examination of his neck revealed no jugular venous distention and the presence of a minor, soft, nontender goiter without discrete nodules. His dry skin had diffusely increased pigmentation, most prominently at the palmar creases. The cosyntropin stimulation test showed a low baseline cortisol level that did not change after stimulation and a higher basal corticotropin concentration. These findings confirmed the diagnosis of primary adrenal insufficiency [11]. A computed tomographic scan of the abdomen, performed at a local hospital, revealed bilateral adrenal atrophy, consistent with autoimmune adrenal failure. The patient also was found to have severe primary hypothyroidism. D Anyfantakis et al. [12] reported a 64-year-old Caucasian female who attended complained of difficulty concentrating, insomnia, and intermittent fatigue, progressively worsening over six months. The patient's prior medical history was unremarkable except for Hashimoto's thyroiditis, treated with sodium levothyroxine 100µg daily. Thyroid function tests were within normal limits except for anti-thyroid antibodies. Adrenal function tests showed elevated plasma adrenocotrophic hormone and low fasting (7:30 am) plasma cortisol levels.

Our patient had a history of primary adrenal insufficiency resulting from entering an adrenal crisis because of non-adherence to the dose of hydrocortisone. After a while, the diagnosis of Hashimoto's disease confirmed the positivity of Thyroid Stimulating Hormone and Thyroid Peroxidase Antibody, As a result of reviewing the patient for a while with a complaint of weight loss, the insulin-inducing factor was investigated, and it was low. Then, celiac disease was diagnosed with a positive Anti-Tissue Transglutaminase Antibody. Stage 1 of type 1 diabetes mellitus was analyzed with Anti-glutamic acid decarboxylase and Anti-islet cell antibodies. Adrenal insufficiency requires replacement therapy with hydrocortisone and fludrocortisone. Treatment of Hashimoto's disease remains on levothyroxine to achieve euthyroidism. For celiac disease, Placement patients on a gluten-free diet. Only its antibodies were positive for type 1 diabetes mellitus without a positive fasting blood glucose test. Follow-up is essential by evaluating the body mass index to detect the presence of weight loss and assessing the bone age of the wrist for growth, In addition to laboratory analyses such as glucose to assess the patient's condition in general. Schmidt's syndrome is more common than the other APS type 2 combinations, but its early symptoms might be confused with a range of other illnesses, making diagnosis difficult, so this paper will be a clear guide for doctors in the future to investigate this syndrome by detailing the patient's complaint,

Table 2

Chemical laboratory analysis of the patient.

Test	Value	Range
Glucose	60	60_100ml/dl
Hemoglobin	9,9	12.5_15
Mean Corpuscular Volume	79	80_100
Platelets	300000	15000_40000
White blood cell	6900	3500_10000
sodium(Na)	125	135_145 mg/dl
(Calcium) CA ++	0.9	1.10_1.3 ml mol/l
(Magnesium)MG++	1.5	1.4_2.7 meq/l
25(OH)D	10.23	25_75 ng/l
Urea	13	<50mg/dl
Iron(Fe)	42	50_145 Mcg/dl
Creatine kinase	0.5	0.5_1.2 mg/dl
Adrenocorticotrophic hormone	1554	7.2_63 pg/ml
Cortisol	0.9	3.5_22 mg/dl
Thyroid-stimulating hormone	5.8	0.6_4.8 ulu/ml
Thyroid peroxidase antibodies(Tpo-Ab)	420	<35 ju/ml
Tissue Transglutaminase IgA Anti body	25	<1 U/mls

especially when there is a medical history.

3. Conclusion

We report this patient with APS-2, a rare condition in childhood. The combination of four immune diseases constitutes a unique and rare case that can be added to the medical literature, especially since it came in childhood. The best treatment methods are replacing hormones and fluids and following a regular diet that suits the patient's condition. We also suggest that the long-term follow-up of these patients is critical.

Ethical approval

N/A.

Please state any sources of funding for your research

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Author contribution

All authors have participated in writing and reviewing the manuscript, All authors have approved the final draft of the manuscript.

Please state any conflicts of interest

All authors declare no conflict of interest.

Registration of research studies

Not applicable.

Consent

Written informed consent was obtained from the parent's patient for publication of these two case reports and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Guarantor

Aghyad Bakkour.

Sources of funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Ethical approval

This case report didn't require review by the Ethics committee,

Aleppo University Hospital, Syria.

Consent for publication

Written informed consent was obtained from the parent's patient for publication of these two case reports and accompanying images. A copy of the written permission is available for review by the Editor-in-Chief of this journal.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Declaration of competing interest

All authors declared no conflict of interest.

Acknowledgment

We want to say thanks to Nagham Hanino for his outstanding efforts. Mrs. Hanino saved neither time nor effort in editing the English language of this article by checking the spelling, grammar, and syntax.

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