



World Scientific News

An International Scientific Journal

WSN 122 (2019) 242-248

EISSN 2392-2192

SHORT COMMUNICATION

Coexistence of halo nevi, atopic dermatitis and hypothyroidism - a case study

Małgorzata Drąg-Zalesińska^{1,2,*}, Nina Rembiałkowska³, Sylwia Borska¹

¹Division of Histology and Embryology, Department of Human Morphology and Embryology, Faculty of Medicine, Wrocław Medical University, 6a Chalubinskiego Str., 50-368 Wrocław, Poland

²Dermatological Outpatient Clinic, 23 Wrocławska Str., 57-200 Zabkowice Sl., Poland

³Department of Molecular and Cellular Biology, Faculty of Pharmacy, Wrocław Medical University, 211A Borowska Str., 50-556 Wrocław, Poland

*E-mail address: malgorzata.drag-zalesinska@umed.wroc.pl

ABSTRACT

Coexistence of autoimmune diseases is increasingly observed. The relationship between type 1 diabetes and Hashimoto's disease and celiac disease is well documented. Reports from recent years also indicate a more frequent occurrence of Hashimoto's disease in patients with atopic dermatitis. In the presented case, we describe the occurrence of hypothyroidism in a girl with atopic dermatitis. Another symptom of the development of the immune process was formation of halo nevi from congenital and acquired nevus.

Keywords: halo nevus, atopic dermatitis, hypothyroidism

1. INTRODUCTION

Melanocytic nevi are mild proliferation of melanocytes that form groups at the dermo-epidermal border or in the dermis. Depending on the age of the occurrence of melanocytic nevi on the skin, we divide them into congenital and acquired ones. Congenital birthmarks are present at birth or appear up to 1 year old [1]. The risk of developing melanoma from this type of nevi is estimated at 0.05-10.7% and increases with their size, especially for those above 10 cm. The risk of developing melanoma within small or medium congenital nevi remains controversial, which is why it is important to monitor them. Acquired nevi occur practically in every human being. Typical acquired nevi have a diameter of less than 6 mm, a light or dark brown colour and a smooth surface. They can occur in any location on the skin. Melanocytic nevi in children do not require prophylactic dermoscopy due to the negligible risk of developing melanoma.

The halo nevus (Sutton nevus) is acquired, very rarely congenital, surrounded by the area of discoloured skin. Discolouration is caused by an immune reaction consisting in the destruction of melanocytes by stimulated T lymphocytes. Patients have anti-melanocytic antibodies in the peripheral blood, although the pigment destruction process is mainly dependent on lymphocytes.

The end result of the immune process is spontaneous regression of the lesion. The incidence of halo nevi in the population (mainly children and young people, more often in girls) is estimated at approximately 1%. They can be single or multiple. They often coexist with autoimmune diseases such as vitiligo, Hashimoto's disease, atopic dermatitis [2]. The process of regression of the mark has a staged course and lasts from several weeks to several years [3]. There are no indications to remove halo nevi with a typical clinical picture. It is reasonable to monitor multiple marks of a sudden beginning and congenial ones.

Atopic dermatitis (AD) is a chronic recurrent inflammatory dermatosis. In almost half of children, the disease appears in the first half of the year, and in 85% before the age of 5. AD is a genetically conditioned disease inherited in a multi-genetic complex. The clinical picture is crucial for the diagnosis of AD. The criteria of Hanifin and Rajka are still the most current.

There are mayor criteria: pruritus, chronic and recurrent course, positive atopic diagnosis in the patient and/or family members, localisation of skin lesions - in children the face, and minor criteria: early onset of changes, increased IgE concentration, wool intolerance, food intolerance, positive point tests, recurrent skin infections, recurrent conjunctivitis, keratosis pilaris, dry skin, hand/foot eczema, nipple eczema, pityriasis alba, cheilitis, perifollicular accentuation, white dermographism, skin itching after sweating, periorbital darkening, exacerbation after stress, keratoconus, cataracts, Dennie-Morgan fold, anterior neck fold, facial erythema. AD are diagnosed when 3 of the 4 major criteria are met and 3 of 23 minor criteria.

Acquired childhood hypothyroidism begins after the 6th month of the child's life. The most common cause of acquired hypothyroidism is autoimmune thyroiditis, called Hashimoto's disease. It is characterised by lymphocytic infiltration and gradual damage to thyroid parenchyma and production of specific thyroid antibodies: against thyroid peroxidase (anti-TPO) and against thyroglobulin (anti-TG). Girls suffer twice as often as boys. The occurrence of Hashimoto's disease is estimated at 1-2% [3, 4].

This disease often coexists with other autoimmune diseases, such as type 1 diabetes, Addison's disease or systemic lupus erythematosus. Recent reports also indicate the possibility of developing a disease in the course of atopic dermatitis [5-7]. Clinical symptoms of

hypothyroidism include: slow growth, fatigue, constipation, weight gain, drowsiness, dry skin, pale skin, weak proximal muscles, delayed sexual maturation. A rare symptom in children with hypothyroidism is precocious puberty. Acquired childhood hypothyroidism usually develops very discreetly [4].

A special form is subclinical hypothyroidism, which is recognised when the increased concentration of TSH (thyrotropin hormone) is accompanied by the correct concentration of the free fraction of thyroid hormones (FT4). People with subclinical hypothyroidism generally do not present any symptoms of hypothyroidism.

2. CASE STUDY

In July 2017, a 6-year-old girl was diagnosed with precocious puberty in the form of pubic hair in the pubic area of the second degree according to the Tanner scale. A child from the age of 3 suffers from atopic dermatitis with a periodic severity of skin lesions in the spring. According to Hanifin and Rajka, she fulfills 3 major criteria: chronic and recurrent course, positive atopic diagnosis in family members, location of skin lesions - face and 3 minor ones: dry skin, cheilitis, periorbital darkening. During the study, there was no inflammation of the skin with a typical location for AD and pruritus. The skin was dry and there was a periorbital darkening. Body structure correct, height 127 cm, weight 24 kg, BMI (body mass index) 14.9.

Diseases past: 3 year of life - pneumonia in the course of chickenpox, 4 year of life - tonsillectomy. In 2016, the girl was tested for celiac disease (level of antibodies against endomysium (EmA) and gliadin (AGA) in the IgA and IgG class) due to the occurrence of the disease in the family (2 daughters of sister of the girl's father and distant female cousin of father have confirmed the disease). All antibodies were negative.

The child underwent basic tests - blood count with smear, glucose and hormones - TSH, FT4, estradiol, testosterone and anti-TPO and anti-TG antibodies, as well as the level of vitamin D3. Thyroid ultrasound was performed as well as left hand X-ray to determine bone age. In basic tests - morphology, glucose - there were no deviations from the norm. Other laboratory test results are presented in Table 1.

Table 1. Laboratory test results; TSH – thyroid stimulating hormone; FT4 – free thyroxine; anti-TPO – antibodies against thyroid thyroidoperoxidase; anti-TG – antibodies against thyroglobulin. All tests were carried out in the diagnostic laboratory Diagnostyka sp. z o. o.

Date	01.08.2017	23.11.2017	21.05.2018	25.09.2018	31.01.2019
Units / Reference range					
TSH uIU/ml; 0,600-4,840	4,560	2,150	2,630	1,700	2,440
FT4 ng/dl; 0,97-1,67	1,37	1,61	1,54	1,64	1,62

Anti-TPO IU/ml; 0-18	16	17	-	13	-
Anti-TG IU/ml; 0,00-115,0	17,10	15,20	-	16,30	-
Vitamin D3 metabolite 25(OH) ng/ml; 20-60	29,20	-	-	-	36,10
Estradiol pg/ml girls up to 10 years old 6-27	9	-	-	6	
Testosterone ng/dl; 6,00-82,00	9,64	-	-	-	-

Description of the ultrasound examination from 4/8/2017

Thyroid located correctly, with a small volume. Echostructure and echogenicity of the thyroid homogeneous, equally moved down, without focal changes. Outlines of both lobes smooth. The vascularisation of both lobes is significantly increased. The right lobe 11.0 mm × 12.2 mm, volume 2.2 ml; left lobe 13.8 mm × 12.4 mm, volume 2.35 ml.

Control ultrasound examination from 07/02/2019

Thyroid is placed correctly, not enlarged. Echostructure and echogenicity of the thyroid homogeneous, still slightly equally moved down, without focal changes. Outlines of both lobes smooth. The vascularisation of both lobes increased, accelerated flows. The right lobe 14.0 mm × 13.2 mm, volume 3.0 ml; left lobe 13.8 mm × 15.5 mm, volume 3.1 ml. Isthmus 3.0 mm.

X-Ray of the left hand from 06/08/2017

Bone age corresponds to the age of a 7-year-old girl. After the endocrinological consultation (August 2017) and taking into account the entire clinical picture, hypothyroidism was diagnosed and Euthyrox N 25 (Levothyroxinum natricum) 25 micrograms - 1 tablet per day and supplementation with vitamin D3 was initiated. In hormone control tests within 18 months, a decrease in TSH and a slight increase in FT4 were observed.

In August 2018, parents reported to the dermatologist due to a change in the congenital melanocytic nevus on the posterior surface of the left thigh - Figure 1. In the dermatological examination, the halo nevus was found. On the periphery of a congenital medium nevus (11 mm × 22 mm), a white border with a width of approximately 3 mm appeared, indicating the development of an autoimmune process. The outline of nevus: irregular, a slightly verrucous surface. The dermoscopic image is shown in Figure 2. On the neck of the child, the second halo nevus was found - Figure 3, which was created at the same time from the acquired melanocytic nevus (diameter 3 mm) with a smooth surface. Dermoscopic image - Figure 4.

After 6 months, nevi in the dermoscopy were checked. No progression of the atrophic process was observed and another control was recommended for the year. The girl is still under control also under the endocrine control.

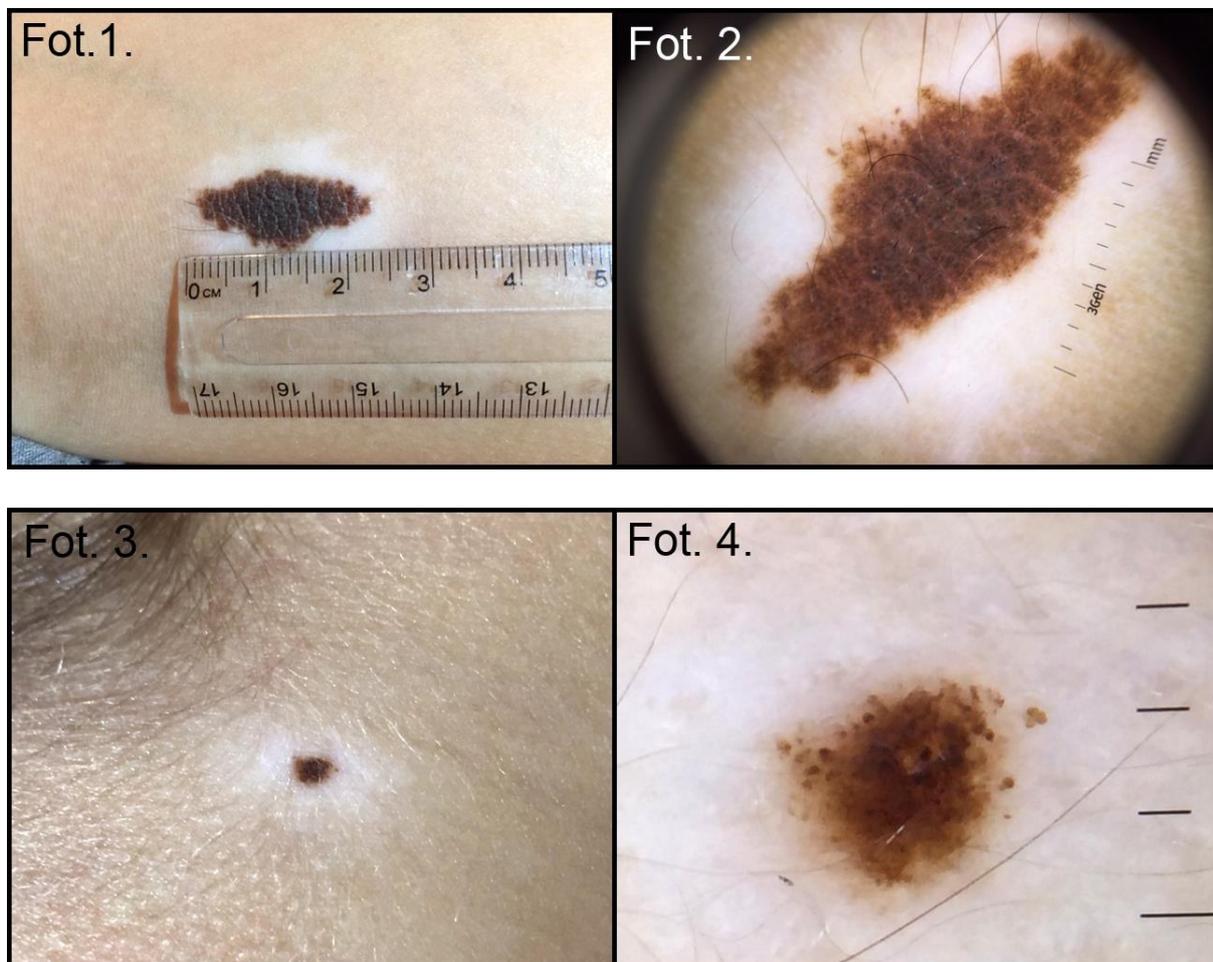


Figure 1. Halo nevus originating from the congenital melanocytic nevus.

Figure 2. Congenital pigmented nevus, partially reticular pattern and cobblestone pattern, peripheral discoloration visible.

Figure 3. Halo nevus, created from an acquired melanocytic nevus.

Figure 4. An acquired nevus, a globular pattern, a single globules visible on the circumference.

3. DISCUSSION

Coexistence of autoimmune diseases is increasingly observed. The connection between Hashimoto's disease, celiac disease and type 1 diabetes is well documented. Recent reports also indicate the connection of Hashimoto's disease with atopic dermatitis [5-7]. In the presented case, we describe the development of hypothyroidism in a girl with AD. The presented case is particularly interesting, because there were no typical symptoms of hypothyroidism, and parents worried about the appearance of pubic hair in 6-year-old child. precocious puberty is a very rare symptom of hypothyroidism. In this case, it was the only symptom. In the performed tests, the level of TSH and FT4 was normal, however, considering the whole clinical picture, the endocrinologist included Euthyrox to the treatment. Attention should also be paid to the

presence of anti-TPO antibodies. Many authors emphasise that the mere presence of these antibodies indicates the ongoing autoimmune process [8-10]. Treatment in the clinical phase of euthyroidism and subclinical hypothyroidism is debatable and unambiguous guidelines have not been created. It is assumed, however, that in people with autoimmune thyroiditis of the Hashimoto type, TSH concentration should remain below 2.5 mIU/ml, treatment should be considered above this level [8, 9]. The entire clinical picture as a coexistence of several immune-mediated diseases is complemented by the appearance of halo nevi, a year after diagnosis of hypothyroidism. The girl is under constant endocrine and dermatological control.

4. CONCLUSIONS

Hypothyroidism in children develops in a very discreet way. Therefore, in the presence of other immunological diseases, thyroid functions should also be monitored even in the absence of clinical symptoms indicating a dysfunction of this organ. The sudden appearance of halo nevi (Sutton nevus) should also be a signal to a deeper analysis of the health status of a small patient.

References

- [1] Moscarella E, Zalaudek I, Ferrara G. Problematic melanocytic lesions in children. *Exp Rev Dermatol.* 2009; 4(3): 249-261
- [2] Price A, Polley DC, Sabol ME, Elston DM. Dermopath quiz: An irregularly colored papule on the back of an adolescent female. *Indian Dermatology Online Journal* 2015; 6(1): 50-52
- [3] Kolm I, Di Stefani A, Hofmann-Wellenhof R et al. Dermoscopy patterns of halo nevi. *Arch Dermatol.* 2006; 142:1627-1632
- [4] Fisher DA, Nelson JC, Carlton EI, Wilcox RB. Maturation of human hypothalamic-pituitary-thyroid function and control. *Thyroid* 2000;10(3):229-34
- [5] Pedulla M, Fierro V, Papacciuolo V, Alfano R, Ruocco E. Atopy as a risk factor for thyroid autoimmunity in children affected with atopic dermatitis. *J Eur Acad Dermatol Venereol* 2014;28(8):1057-60
- [6] Pedulla M, Fierro V, Marzuillo P, Capuano F, Miraglia Del Giudice E, Ruocco E. Skin disease and thyroid autoimmunity in atopic South Italian children. *World J Clin Pediatr* 2016; 5(3):288-92
- [7] Pedulla M, Umamo GR, Fierro V, Capuano F, Marzuillo P, Perrone L, Del Giudice EM., Atopy as a risk factor for subclinical hypothyroidism development in children. *J Pediatr Endocrinol Metab* 2017; 30(8): 851-856
- [8] Leung AKC, Leung AAC. Evaluation and management of the child with hypothyroidism. *World J Pediatr.* 2019 Feb 8. doi: 10.1007/s12519-019-00230-w
- [9] Crisafulli G, Gallizzi R, Aversa T, Salzano G, Valencine M, Wasniewska M, De Luca F, Zirilli G. Thyroid function test evolution in children with Hashimoto's thyroiditis is

closely conditioned by the biochemical picture at diagnosis. *Ital J Pediatr* 2018 Feb 7; 44(1): 22

[10] G. Radetti. Clinical aspects of Hashimoto's thyroiditis. *Endocr Dev* 2014; 26: 158-70