

The problem of excessive hair loss as a signal for the diagnosis of coeliac disease - A family case

Wioleta Jankowiak¹, Weronika Stępnik², Arkadiusz Jundziłł³, Piotr Brzeziński⁴

¹Department of Cosmetology, University of Health in Gdańsk, Gdańsk, Poland, ²FT Concept Weronika Stępnik, Collegium Medicum Nicolaus Copernicus University in Bydgoszcz, Poland, ³Department of Regenerative Medicine, Cell and Tissue Bank, ATMP Manufacturing Facility, Ludwik Rydgiel Collegium Medicum in Bydgoszcz, Poland, ⁴Institute of Health Sciences, Pomeranian University of Słupsk, Słupsk, Poland

Corresponding author: Wioleta Jankowiak, Pharm. D, E-mail: wioleta.jankowiak@gmail.com

ABSTRACT

Celiac disease is an autoimmune disorder in which the small intestine is damaged after ingesting gluten. Baldness often co-occurs with various systemic diseases including autoimmune diseases. In addition, alopecia can result from nutritional deficiencies. In the case of celiac disease, we are mainly talking about deficiencies of iron, fat-soluble vitamins (A,D,E,K), vitamin B12 and folic acid. Telogenetic alopecia (TE) is diffuse and reversible alopecia, and the causes of this condition can be nutritional deficiencies and impaired absorption. Celiac disease has been linked to alopecia areata (AA). We describe the case of a mother and daughter with a history of hair loss, which represented the only incipient (mother's case) and subsequent (daughter's case) extraintestinal manifestation of celiac disease.

Key words: Coeliac disease, Hair loss, Telogen alopecia

INTRODUCTION

Celiac disease is an autoimmune disorder associated with the dysfunction of gluten digestion in the upper human gastrointestinal tract. Gliadin molecules that are not digested (e.g., peptide from the α -gliadin fraction) do not undergo degradation induced by proteases of the brush-border membrane of the digestive organs. The indicated particles enter the intestinal epithelial pathway and bind to proteins [1,2]. Various subtypes of celiac disease can be mentioned: non-classical, seronegative, potential and non-responsive. Damage to the intestine due to celiac disease is characterized, among other things, by a gradual decrease in the volume of villi (most often located in the proximal region of the jejunum) and hyperplasia of the intestinal crypts. It is also followed by the occurrence of positive tTG autoantibodies [3]. In addition to the genetic factor, a possible cause in the form of excessive permeability of the small intestine should be pointed out and malabsorption should be all the more indicative of biopsy [4].

Typical symptoms of celiac disease include diarrhea, discomfort in the abdominal area (similar to irritable bowel syndrome), weight loss or fatty tissue, abdominal distension after meals and malabsorption - including anemia due to insufficient iron or folic acid and vitamin B12. It is also associated with vitamin deficiencies (A,D,E,K). In addition to the typical symptoms of celiac disease, there are atypical symptoms, by which it is more difficult to immediately diagnose the disorder. These include inflammation of the skin, itching of the skin of the knees, elbows and buttocks, recurrent aphthae and enamel loss, and even peripheral neuropathy [5]. Another thing to mention is the feeling of fatigue, which is bothersome to daily functioning and is reported by people with celiac disease [6].

Alopecia areata (AA) has been reported as a non-celiac marker of celiac disease, the symptoms of which can range from single, well-demarcated areas of hair loss to complete absence of hair. Diagnosis is made based

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on trichoscopic features (including exclamation point hairs, black dots, yellow dots, broken hairs) [7,8].

CASE REPORT

A 44-year-old Caucasian woman was admitted because of excessive hair loss, poor hair quality after length (it was chipping, not forming a consistent line). The patient complained of hair pain - trichodynia, which can be considered the main symptom of telogenetic alopecia [9,10]. The woman had no medical history. She described herself as, a healthy person with no major complaints. Her excessive hair loss had been a problem for several years, and she complained of fatigue, recurrent herpes and unexplained headache. She did not report a problem with heavy periods, which could affect iron results. She did not report, any gastrointestinal complaints. Pallor of her skin could be observed.

Trichoscopic examination revealed: the presence of single yellow dots, thin terminal hairs, the presence of hair units with a single hair shaft, and properly growing hair. The problem affected the entire scalp area, with most of the hair having a normal appearance. The woman reported a reduction in their density. PT (plucking test) was positive. The condition of the patient's scalp is shown in figures 1 and 2.

Standard test results recommended for consultation indicated a ferritin deficiency of 8.57 ng/ml (13.00-150.00). Previous tests indicated anemia: Hemoglobin (9.7 g/dl (11.2 - 15.7), Hematocrit 32 % (34-45) MCV 76 fl (79 - 95), MCH - 23 pg (26- 32), MCHC - 30.2 g/dl (32.2 - 35.5), Iron - 35.3 µg/dl (33.0 - 193.0).

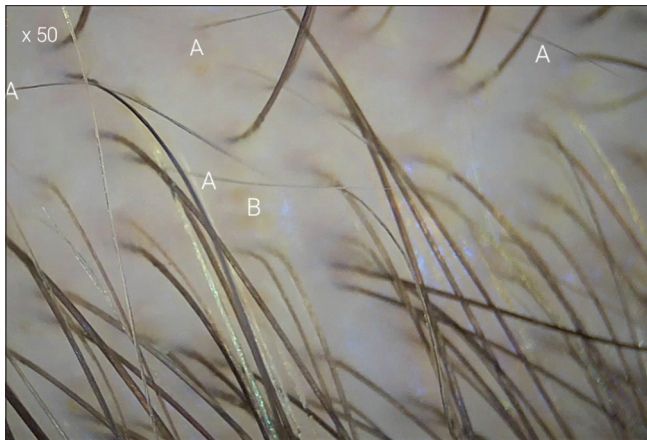


Figure 1: Trichoscopic photo - 50x, polarized light, normal hair regrowth - A, yellow dots - B.

P/c. p. tissue transglutaminase IgA - 364 RU/ml (≥ 20 RU/ml positive) was also performed, Immunoglobulin cl.A (IgA) - 1.08 g/l (0.70-4.00). According to the guidelines, receiving a positive result of anti-tGT antibodies in IgA class is one of the criteria for the diagnosis of celiac disease. The woman introduced a gluten-free diet (which temporarily prevents a biopsy from the small intestine). As a result of the introduction of the gluten-free diet, she achieved a significant improvement in her Ferritin score - 29.10 ng/ml (13.00 - 150.00), Iron - 131 µg/dl, Hemoglobin - 14.5 g/dl (11, 2 - 15.7), Hematocrit - 43.8% (34.1-44.9), MCV - 87.4 fl (79.4-94.8), MCH - 28.9 pg (25.6-32.2), MCHC - 33.1 g/dl (32.2-35.5) and hair stopped falling excessively. Biopsy in this patient was performed in some time (after provocation with gluten-containing diet) - result Marsh-2. With this patient, the clinical diagnosis was made on the basis of the biopsy image and serological tests.

For the next visit, the mother reported a daughter whose mother had noticed stronger hair loss for a long time. Screening, control tests performed earlier showed in the 14-year-old girl Hemoglobin - 10.7 g/dl (12.0-15.5), MCV - 72 fl (77 - 94), MCH - 20 pg (27-33), MCHC 28.2 g/dl (32.2 - 35.5), Iron - 25.4 µg/dl (33.0-193.0), Ferritin 12.50 ng/ml (13.00-68.00). The patient did not report any gastrointestinal problems. A recheck of ferritin in a few months indicated a Ferritin of 6.89 ng/ml (13.00-68.00), which prompted the family doctor to perform further diagnostics, which showed: P/c. p. endomysium (EmA) IgA - positive, P/c. p. endomysium (EmA) IgG - positive, P/c. p. tissue transglutaminase (anti-tGT) IgA > 800 RU/ml (≥ 20 positive), P/c. p. gliadin (DGP) IgA 54 Units (> 30 strongly positive), P/c. p. gliadin (DGP) IgG - 60 Units (> 30 strongly positive), immunoglobulin cl.A (IgA) - 0.80 g/l (0.47- 2.49).



Figure 2: Trichoscopic photo - 50x white light, properly regrowing hair - A.

It was clearly stated on the basis of serological tests (P/c. p. endomysium (EmA) IgA - positive, P/c. p. endomysium (EmA) IgG - positive, P/c. p. tissue transglutaminase (anti-tGT) IgA > 800 RU/ml (≥ 20 positive), P/c. p. gliadin (DGP) IgA 54 Units (> 30 strongly positive), P/c. p. gliadin (DGP) IgG - 60 Units (> 30 strongly positive) and normal cl.A immunoglobulin (IgA) - 0.80 g/l (0.47- 2.49)) celiac disease.

Trichoscopic examination indicated that the scalp was in good condition. Trichoscopy showed thin terminal hairs, the presence of hair units with a single hair shaft, and normal hair regrowth. The hair had a normal appearance. PT (plucking test) was positive. The patient reported excessive hair loss. The condition of the patient's scalp is shown in figures 3 and 4.

A gluten-free diet was recommended, which after several months improved blood results and mood. The history taken at the time of the trichological analysis noted that as a child the patient had severe skin problems similar to atopic dermatitis and as she grew older she developed rough shoulders and skin eruptions in the form of small pimples, which were also localized on her forehead. She was also diagnosed with asthma. However, none of the specialists suggested a diagnosis

of celiac disease at the time. Her periods were not heavy which could affect her iron results. The patient also reported easy bruising, which could indicate low levels or iron deficiency, which the test results confirmed. Recommendations of a gluten-free diet and support with products rich in iron and conducive to iron absorption improved the Patient's condition.

DISCUSSION

Celiac disease usually manifests itself in the gastrointestinal area, such as diarrhea, abdominal pain, bloating, nutrient malabsorption and consequent weight loss or deficiencies of significant nutrients. There are also atypical symptoms, such as anemia, osteoporosis, skin inflammation, fatigue or excessive hair loss, for example.

Hair loss has been described as a symptom of celiac disease, but there is little knowledge of telogen alopecia, which may be one of the first symptoms that should prompt a specialist to make further diagnosis, especially when the results of additional serological tests indicate iron and/or ferritin deficiencies. Hair loss in celiac disease may be related to abnormal absorption of nutrients, including vitamins and minerals necessary for hair growth, as well as the immune system's response to gluten. We present the case of a mother and daughter who presented with excessive hair loss, which was their most worrisome complaint. By way of diagnosis, basic tests including iron, ferritin and CBC were recommended. Their low parameters prompted the specialist to further diagnose celiac disease.

The younger patient was unequivocally diagnosed with celiac disease after serological results (P/c. p. endomysium (EmA) IgA - positive, P/c. p. endomysium (EmA) IgG - positive, P/c. p. tissue transglutaminase (anti-tGT) IgA > 800 RU/ml (≥ 20 positive), P/c. p. gliadin (DGP) IgA 54 Units (> 30 strongly positive), P/c. p. gliadin (DGP) IgG - 60 Units (> 30 strongly positive) and normal immunoglobulin cl.A (IgA) - 0.80 g/l (0.47- 2.49)) celiac disease and in her mother after serological results as well as biopsy (P/c. p. tissue transglutaminase IgA - 364 RU/ml (≥ 20 RU/ml positive). Immunoglobulin cl.A (IgA) - 1.08 g/l (0.70-4.00) intestinal biopsy result - Marsh-2). The 14-year-old patient previously had skin problems similar to atopic dermatitis, rough shoulders but she was not diagnosed with celiac disease and these are among the symptoms that may indicate just celiac disease. The



Figure 3: Trichoscopic photo - 50x, polarized light, peripilar sign - C.

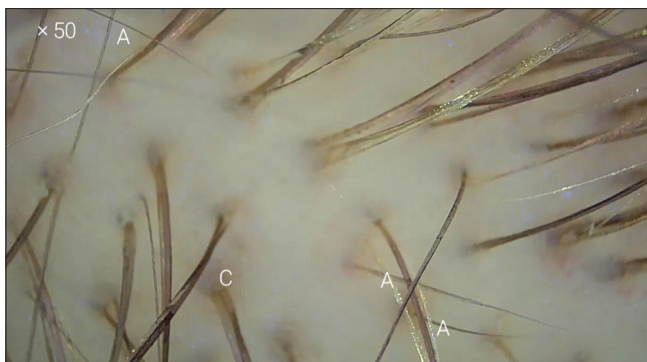


Figure 4: Trichoscopic photo - 50x, polarized light, peripilar sign - C, properly regrowing hair - A.

42-year-old mother had no symptoms other than her hair getting weaker and weaker, which worried her the most and prompted her to look for the cause of the problem. Her hair loss and iron and ferritin parameters improved after she introduced a gluten-free and iron-rich diet.

CONCLUSION

Hair loss is a physiological phenomenon and we lose about 100 hairs per day [11]. If a person notices more intense telogen hair loss it will often have a pathological basis and should prompt a search for the cause of such a condition. Baldness can have many causes and deficiencies and malabsorption are among them. Telogenetic alopecia (TE) presents itself with diffuse hair loss that occurs within a few months of a damaging factor, which is associated with premature entry of hair follicles into the telogen phase.

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms, in which the patients gave their consent for images and other clinical information to be included in the journal. The patients understand that their names and initials will not be published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

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