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Case Report

Case Report: Early Life Association of Coeliac Disease and Alopecia Areata in Preschool Child with Potential Improvement After Gluten Free Diet

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Abstract

Background: Coeliac disease (CD) is an autoimmune-mediated gluten-sensitive enteropathy that affects approximately 1% of the population. Over the preceding two decades, there has been an increase in prevalence. Coeliac disease can present itself in a variety of ways and might be subtle, so it's important to investigate both gastrointestinal and extraintestinal symptoms.

Researchers have known about the link between alopecia areata and celiac disease for more than 20 years. The possibility of co-existing celiac disease and the impact of a gluten-free diet on hair loss and regeneration.

Methods: This is a case report; diagnosis in our case was established b testing the patient's serum by enzyme-linked immunoassay to detect antitransglutaminase IgA antibodies. Along with clinical diagnosis of alopecia areata.

Results: Our case showed that alopecia areata can be presented so early in association of silent coeliac disease, while gluten free diet can completely improve both of them.

Conclusion: The present case highlights that any early presentation of alopecia areata should promote investigation for coeliac disease as part of differential diagnosis also that presentation of coeliac disease doesn't essentially need to be with intestinal symptoms.

Keywords: *Coeliac Disease; Alopecia Areata; Gluten Free Diet*

Introduction

Celiac disease is a life-long gluten sensitive intestinal enteropathy with multifactorial aetiology. Where both genetic and environmental factors play an important role. Usually, the prevalence of coeliac disease is 1%. Many cases is undiagnosed because it is often atypical and silent on clinical grounds [1].

While coeliac disease was once considered to be a diagnosis that primarily affected children in a European population, it is now recognised that it may affect anyone of any age. It is most often diagnosed between the fourth and sixth decades (mean age at diagnosis: 45 years), with females having a greater frequency [2].

The intestinal form of coeliac disease, which is characterised by diarrhoea, lack of appetite, abdominal distention, and failure to thrive, is more often identified in the paediatric population and children less than 3 years [3].

Extraintestinal symptoms are common in both children and adult [4]. Microcytic anaemia owing to iron insufficiency, which can be detected in up to 40% of cases (due to iron malabsorption or chronic inflammation), or macrocytic anaemia due to folic acid and/or vitamin B12 deficiency, which is more rare (more frequent in Europe than in the US). Changes in bone mineral density, such as osteopenia or osteoporosis (which affects around 70% of patients at diagnosis), are linked to calcium and vitamin D3 absorption problems [5,6].

Alopecia areata (AA) is one of the most common forms of hair loss in childhood. It has prevalence of 1-2% of the population and commonly has an onset during childhood or adolescence [7]. AA is characterized by sudden onset patchy hair loss on the scalp. Although the exact cause of AA is unknown, it is thought to be caused by an autoimmune reaction. Addison's disease, autoimmune thyroiditis, atrophic gastritis, systemic lupus erythematosus, rheumatoid arthritis, myasthenia gravis, and vitiligo are all common autoimmune diseases in the same people [8].

While the majority of children with mild AA recover on their own, AA is difficult to treat due to the disease's unpredictable course and responsiveness to therapy [9].

Researchers have known about the link between alopecia areata and celiac disease for more than 20 years. The possibility of co-existing celiac disease and the impact of a gluten-free diet on hair loss and regeneration [10].

Case Presentation

A 28 months old girl presented to her general practitioner (GP) with multiple areas of hair loss over the in scalp. She was referred to a Paediatric consultant for review and blood investigations were requested.

As her past history, she had uneventful past history with normal delivery at full term with a birth weight of 4.14 Kg. she was bottle fed with regular formula milk, weaning started at the age of 6 months, cow's milk was introduced at the age of 12 months, her diet said to be varied. No history of drug or food allergies, she was up-to-date in her immunization and she was developmentally appropriate for her age. She didn't have a significant family history of chronic illness or allergy apart from her grandfather who has suffered from coeliac disease.

In view of having areas of alopecia over the scalp; At age of 32 months she was reviewed by a pediatrician in the outpatient clinic. Her examination showed a weight of 17.4 kg (between 98th - 99.6th centile) and height of 96.5 cm (between 75th - 91st centile), normal vital signs. Regarding her systemic examination she had normal respiratory, cardiac examination. Abdominal examination showed mild abdominal distension which wasn't tender to touch and no organomegaly or ascites was detected, skin examination showed patchy hair loss from the scalp with normal underlying skin.

Routine blood investigations were done along with coeliac screen and thyroid test. The results showed normal liver function tests, electrolytes, renal function test and bone profile. Full blood count showed microcytic hypochromic anemia [6] with Hemoglobin of 109 g/dl, MCV 72, MCH 22, Hct 0.35. with normal WBC and PLT count, ferritin of 9 ug/L, Vitamin B12 1351 ng, folate 8.7 ug/L and vitamin D (immunoassay) 70 mmol/L.

Raised Anti –IgA TTG antibodies >200 u/ml was noted with normal IgA level, TSH was raised at 5.24 whereas T4 and anti-TPO antibodies were normal, 12.6 u/ml.

Based on the blood results, iron supplementation was started for the next 3 months, and she was referred to Paediatric gastroenterology specialist for follow-up; gluten free diet (GFD) has been started with further follow up and support by pediatric dietitian, after starting gluten free diet, Anti-IgA TTG dropped after month to 25.8 U/ml and further lowered to 5.6 u/ml after 7 months of gluten-free diet. Also, her abdominal distension and the hair loss were improved with normalization of the hair pattern over the scalp within the next 6 months.

Discussion

Diagnosis of coeliac disease is challenging because of only a few patients present with the classic symptoms whereas a higher number of patients come with non-classical or silent presentations, makes diagnosis difficult [11].

There is well known association between coeliac disease and many other condition, especially those with autoimmune origin including alopecia areata (AA). The significance of understanding such relationships is twofold: on the one hand, celiac disease may only manifest with symptoms of the second disease, making the diagnosis more difficult; on the second hand, a gluten-free diet will improve manifestation and may lead to a better outcome for alopecia areata [12].

Although the pathophysiology of coincident autoimmune alopecia areata and coeliac disease is unknown, both share similar HLA haplotypes and are linked to the gene encoding cytotoxic T-lymphocyte-associated antigen [13].

To our knowledge, this is one fewest reported cases highlighting the association between coeliac disease and other autoimmune diseases including alopecia areata early in the life and alopecia areata constitute the main clinical manifestation of celiac disease in this patient, there are other published studies that show the association in older children and adults [14].

In 1995 the link between coeliac disease and alopecia areata was published for first time by GINO R., *et al.* where they noticed the link in three patients one teenage and two adult patients [15].

In our case hair loss was the first and the only signs too early in life at 28 months of age made the parent seeking medical advice then coeliac disease was diagnosed serologically and after gluten-free diet was commenced; the hair loss improved totally within few months.

So, in our case report we try to bring attention that alop could present early in life as association of underlying coeliac disease and gluten potentially give good result in treatment of alopecia areata.

Conclusion

There is link between coeliac disease and alopecia areata and can be presented early in life so the full knowledge of coeliac disease manifestation can result in a better outcome in the quality of life of the patients with this disease.

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