

The Link between the Clinical Features of Atopic Dermatitis and Gluten-related Disorders

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Abstract Patients affected by non-celiac gluten sensitivity usually report both intestinal and extra-intestinal symptoms arising shortly after the ingestion of gluten-containing food. Atopic dermatitis is a chronic inflammatory skin disease that affects both children and adults. We present the case of a family composed of a mother (32 years old) and her two daughters (6 and 9 years old) who were diagnosed with atopic dermatitis and gluten related disorders.

Keywords: atopic dermatitis, gluten-related disorders, gluten free diet

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1. Introduction

Atopic dermatitis (AD) is a highly prevalent, inflammatory skin disease that affects between 15% and 30% of children and 2% and 10% of adults worldwide [1]. The pathophysiology of AD involves both immune dysregulation and skin barrier abnormalities [2]. Its course is also augmented by allergen exposure, stress, and microbial infection [3].

Gluten-related disorders (celiac disease, wheat allergy, and non-celiac gluten sensitivity) have gradually emerged as an epidemiologically phenomenon with an estimated global prevalence around 5% and share similar clinical manifestations, yet there are peculiar pathogenetic pathways involved in their development [4,5,6]. In celiac disease (CD) there is a T-cell mediated autoimmune process which is triggered by gluten derived peptides [7]. This process is localised in the small bowel, where it leads to enteropathy and malabsorption syndrome [8]. Wheat allergy (WA) is another type of adverse immunologic response to proteins contained in wheat and related grains. The inflammatory response to these allergenic proteins is mediated by the Immunoglobulin E (IgE) antibodies [9]. The majority of WA children suffer from moderate-to-severe atopic dermatitis and wheat ingestion may lead to typical IgE mediated reactions including angioedema, urticaria, bronchial obstruction, abdominal pain or in severe cases

anaphylaxis [6]. The pathogenetic mechanisms of non-celiac gluten sensitivity (NGCS) are far from being clearly understood. The current opinion is that there is a non-autoimmune non-allergenic process. The clinical presentation of NGCS includes gastrointestinal symptoms (abdominal pain, bloating, altered bowel habit), fatigue, headache, mood disorders and skin manifestations (eczema, rash) [10].

2. Case Presentation

We present the case of a family composed of a mother (32 years old) and her two daughters (6 and 9 years old) who were diagnosed with atopic dermatitis.

The medical history of the mother revealed that she was first diagnosed with AD at the age of 4 months old. The most important clinical manifestations were erythematous-squamous plaque affecting the cheeks and the flexural surfaces (like the wrists/ankles and antecubital/popliteal fossae). The triggers that worsened her symptoms were environmental factors, several infections and the using of some topical medications. Her treatment included antihistamines to control itching; she was also recommended to avoid some food triggers that seemed to worsen her rashes. At the age of 12 years old the patient was also diagnosed with CD and she was managed with gluten-free diet, vitamins and minerals. Removing gluten from her diet improved her clinical manifestations and the

only symptom that persisted was the rash on her cheeks. *The rash tend to flare, go away, and then come back again.*

The first-born girl was diagnosed with AD at the age of 2 months old. Her treatment included corticosteroids, emollients and skin protectants. The evolution of the clinical feature was characterized by phases of remission of symptoms, alternating with periods of exacerbation. She was also tested for CD but the results - tissue Transglutaminase IgA antibody (tTG-IgA); IgA Endomysial antibody (EMA), were negative. Some allergy blood tests (Ig A and Ig E) revealed severe dust mite allergy. When the girl was 6 years old, her mother decided to remove gluten from her daughter's diet. Every attempt to reintroduce the gluten in the her diet ended in the exacerbation of the clinical manifestations. Moreover, the exacerbation of the skin lesions had a negative impact on the quality of life of the young patient. The girl was again tested for CD one month after her mother reintroduced gluten in her diet but the results remained negative. The final diagnosis was AD combined with NCGS.

The second-born girl was first diagnosed with AD when she was 5 months old. The girl was first suspected to be allergic to cow's milk protein, but the allergy tests were negative. Her treatment consisted of topical corticosteroids, emollients and skin protectants. The evolution of the skin lesions was unsatisfying and at the age of 2 years old the girl was tested for CD. The tests were negative. Her mother decided to remove the gluten from her daughter's diet and the results were spectacular. All the clinical manifestations had disappeared and the patient reported significantly improved quality of life. The diagnosis of the second-born girl was AD combined with NCGS.

3. Discussion

There are a lot of studies that sustain the on-going debate on the appropriateness of gluten elimination from the diet in the absence of CD or WA [11]. A range of laboratory diagnostic methods has been developed to support patient management and disease control. The choice of diagnostic method depends on the purpose for which the testing is done (e.g. clinical diagnosis, genetic tests, immunology tests). The findings from the clinical history, symptoms, serological and histological tests are strongly required in order to reach an accurate diagnosis and treatment [12,13,14]. Gluten-related disorders are emerging as an important clinical entity along with the increasing popularity of the gluten-free diet.

In conclusion, AD is characterized by typically distributed eczematous skin lesions, dry skin, and intense pruritus. However, there are numerous other diseases that can mimic the skin findings, including the clinical manifestations of gluten-related disorders (CD, WA and NCGS) and the gluten seems to be the key in the treatment.

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