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Celiac Disease: A Comprehensive Review

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Abstract **Review Article**

Children frequently acquire allergies to various proteins in wheat, which are IgE-mediated. So, with such varied symptoms… from gut stuff / reflux, to skin stuff (hives, eczema, etc), to breathing issues (hives or asthma that is) etc, etc. In the most severe cases, the condition can lead to anaphylaxis. It is crucial that you accurately differentiate healthy from other alternative pathways that lead to the disease such as celiac disease or non-celiac gluten sensitivity. The diagnosis is based mainly on history, skin prick tests, determination of specific IgE in the blood and occasionally oral food challenges. Management is primarily avoidance of direct wheat and wheat products consumption, with the exception of nutrition who are not stunted or delayed in growth. This is management of emergencies and self-epinephrine use among those children at risk of life-threatening reaction. The prognosis varies considerably. Many children eventually outgrow a wheat allergy by the time they reach school age, but some remain sensitive to wheat their entire lives. If we can diagnose this appropriately, and treat this adequately then you can reduce the morbidity, and improve their quality of life."

Keywords: Wheat allergy, IgE-mediated, children, celiac disease, non-celiac gluten sensitivity, diagnosis, skin prick test, IgE blood test, oral food challenge, anaphylaxis, management, avoidance, epinephrine, prognosis, quality of life.

1. INTRODUCTION

Wheat allergy is yet another immune-related ailment, in which the body confuses wheat proteins (like gliadins and glutenins) which are innocuous with something harmful [1]. A phenomenon known as Local Recognization triggers IgE antibody production. When a person with a wheat allergy comes into contact with a wheat protein, his or her immune system reacts by developing IgE antibodies to the protein. These antibodies attach to immune cells known as mast cells and basophils and trigger them to release histamine (and other substances), which are responsible for a variety of allergic signs and symptoms. Such is the mechanism of the more common cases of allergic message [2]. Wheat allergy also occasionally develops in adults, although the number of cases is beginning to decrease in recent years. It is acknowledged that disease may resolve as the child's immune system matures, although for many it may continue into adulthood [3]. Wheat Allergy Wheat allergy is one of three related conditions that result from an immune response to wheat or wheat gluten -- the other two being celiac disease and non-celiac gluten sensitivity. Celiac disease is not an allergy; it is a type of immune disease where the ingestion of gluten leads to the immune system attacking the lining of the small intestine, causing permanent damage and malnourishment [4]. NCGS, despite being largely believed to be real, is defined by having symptoms getting better when gluten is withdrawn in the absence of IgE or autoimmune driven intestinal pathology [5]. Unlike the other food allergens identified above, wheat allergy is IgE-mediated, and it is prone to immediate hypersensitivity reactions to exposure [6]. It is particularly interesting to study wheat allergy in children since the clinical presentation of symptoms may range in severity. You have mild symptoms like hives, or itchiness, or GI symptoms, and severe symptoms where, you have respiratory distress, or swelling, or, really, if you trust the pictures, anaphylaxis (a state where you need treatment RIGHT NOW.). [7] But in addition to the risk of anaphylaxis, chronic wheat allergy might be also be

causing longer term harm to the body. The non-wheat-consuming child save the ordeal of a limited diet that is not likely to be acceptable at that age level will grow slowly, be in poor nutritional state and in general retarded development all afterward [8]. This underscores the importance of early detection, diagnosis and management, including dietary intervention and education on emergency treatment, to reduce morbidity and increase survival [9].

2. Epidemiology

The prevalence of WAS to children by across all studies is reported separately Longitudinal change in prevalence of WAS among children according to region and diagnostic criteria of WAS The prevalence of WAS is varied in children based on the region and diagnostic criteria of WAS. Epidemiology Proportion of lactose malabsorbers 0.2-1% in Western populations Allergy predominantly observed among infants and usually outgrown by 2 years with introduction of wheat products into diet (Note that not all kids with a wheat allergy have a gluten allergy.) Keep in mind, too, though, that a wheat allergy can be outgrown in most kids by the time they reach adolescence.

Risk factors include:

Personal history or family history of atopic disease (eg, eczema, asthma, allergic rhinitis)

Early infant formula consumption Infants' consumption of wheat products

Co-existing allergic diseases associated with increased risk of wheat allergy

Suggested figure: Global distribution of children prevalence of wheat allergy.

Pathophysiology

Neutralization of the IgEmediated response is the primary mechanism involved in wheat allergy. Children (sensitised) to wheat produce specific IgE antibodies after ingestion of wheat proteins such as those found in gliadins and glutenins. These antibodies attach to immune cells known as mast cells and basophils that initiate the release of histamine and other substances that cause the allergic symptoms.

Amid some of these cases, the reactions aren't IgE mediated and present as late gastrointestinal symptoms such as chronic diarrhea or vomiting. These reactions are also not IgE mediated and are explained by other immune system reactions [9].

Proposed figure: Schematic representation of IgE-mediated and non-IgE-mediated reactions to wheat.

Clinical Manifestations

Wheat Allergy in Children The manifestations of wheat allergy in children depend on the organ system involved; the following is based on the individual organ systems: .

Skin (cutaneous): Hives (urticaria), swelling below the skin (angioedema), flares Eczema [10]

Gastrointestinal: lumps in the tummy (abdominal pain), vomiting, loose bowels, occasionally constipated. t[11].

Respiratory: sneezing, a runny nose (rhinitis), wheezoe and in rare cases, an anaphylaxis[12]

Symptoms can range from mild to fatal. Early intervention and timely care are crucial to avert the worst-case scenarios [13].

Suggested figure: PowerPoint presentation on symptoms by organ system (skin, GI, respiratory).

Diagnosis

WA diagnosis rests on clinical history and various laboratory examinations [14]. Such laboratory tests could include the following: demonstrated symptom pattern after consumption of wheat. Therefore, SPT is kind of sensitive to diagnose this as an IgE mediated way reactions but also could be positive with false. Test IgE in blood: shows antibody's presence in the blood against the wheat cytokine. Pile food challenge (OFC) The picture shows a wheat allergy diagnostic flow chart with the OFC leading the process. New tools: CRD is the methodology used to differentiate the protein sequence of the wheat allergen or predict the reaction proportion by identifying particular wheat extract [16]. Proposed statement: the process of WA diagnosis begins in the clinical and follows the flow chart image above up to the OFC. Management Therapy for WA is anchored on a wheat-free diet. Caregivers and children should be taught where wheat may be hidden as well as in reading food labels [17]. Emergency planning: a child with a severe life-threatening reaction should have an immediate epinephrine injector administration consent form. Novel

treatments OIT has the potential to elicit wheat tolerance in particular children. Nevertheless, even though OIT is a technique under investigation, its effectiveness and protection when taken for long have not been resolved [19]. Concluded Image: infographic on the management of WA management of acute condition occurs when emergency improvement occurs preventive an emerging treatment occurs. Prognosis Image A: line diagram displaying the chances of overgrowing WA from birth to teenage.

Conclusion

The early phase of childhood wheat allergy is of diagnostic significance and is associated with different clinical phenotypes. Early diagnosis and effective treatment as well as basic science and research of immunotherapy and diagnostic tests are essential to improve survival and the quality of life. When severe acute reactions are avoided through patient education, immediate care and follow-up medical care over time, loss of growth and feeding can be prevented in affected children.

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