



Article

Frequently Ill Children and Food Allergy: Clinical Links, Risk Factors, and Management Strategies

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Abstract: The aspect of children with frequent illnesses is a clinically significant subject to be further explored beyond the routine infections. Over the past few years, there has been a growing move towards background allergic diseases, especially food allergy, as a cause of morbidity recurrence. The paper examines the connection between common diseases in children and food allergy, their immunological processes, clinical presentation, and treatment. Food allergy can be defined as the abnormal immune response to dietary proteins, and is commonly linked to chronic inflammation, changes in the microbiota of the gut and defects in mucosal immunity. The changes can make one prone to respiratory and gastrointestinal diseases. There have been indications that children suffering from food allergies exhibit high prevalence rates of repeated infections in comparison with non-allergic children. The results emphasise the role of early diagnosis, dietary change, and combined care measures in the light of decreasing the disease burden. The relationship between the allergy processes and the immune system is crucial to the enhancement of pediatric outcomes, especially in areas where the level of awareness and diagnostic abilities are low.

Keywords: Frequently ill children, food allergy, pediatric immunity, recurrent infections, allergic inflammation.

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Introduction

In daily practice involving the pediatric care of children who have repeated illnesses, such children are usually considered as part of a normal developmental process, especially in early childhood when the immune system is still exposed to environmental influences. Nevertheless, in instances where infections are more prevalent than usual, or the recovery process is prolonged, this trend indicates something is amiss in the way things work, and that may not be obvious at first. Clinicians are increasingly starting to consider chronic diseases like food allergy as a potential contributory factor to mere immune immaturity.

It is now known that food allergy is one of the most prevalent chronic diseases in children, with an increasing prevalence in both developed and developing areas [1]. It is characterised as a pathological response of the immune to particular food proteins, which is usually based on immunoglobulin E or cellular immune mechanisms. Although classic symptoms, including skin rashes, gastrointestinal disturbances, or acute allergic reactions, are well elaborated, the overall systemic effect of food allergy is not well valued in the general clinical assessment.

Immune system imbalance is one of the most important factors which relate to food allergy and frequent illness. The immune response of allergic children is also normally skewed to a T-helper 2 dominant profile that favours the generation of cytokines that cause

allergic inflammation [2]. Even though the approach is protective in some situations, it can diminish the effectiveness of responses to common pathogens. Consequently, children with food allergies can have respiratory infections frequently, such as frequent cases of upper respiratory tract infections, bronchitis, and chronic cough.

Another important factor is the integrity of epithelial barriers. The gastrointestinal and respiratory tracts play the main role in defence against environmental pathogens. Low-grade inflammation may arise due to chronic exposure to allergens and slowly cause a break in these protective barriers [3]. When the barrier is broken down, microorganisms will have an easier entry way, hence more frequent and severe infections. This mechanism could be the reason why other children still get ill even after being given the right symptomatic treatment.

Recent studies have also identified the importance of gut microbiota in the development of the immune system. Food-allergic children tend to have low microbial diversity and distorted intestinal flora composition [4]. The disproportion, which is also known as dysbiosis, may lead to the impairment of immune regulation and predisposition to infections. The interplay of microbiota, immune development and allergic sensitisation is a fast-developing field of pediatric study.

Nevertheless, in most clinical practices, such as in some parts of the world like Uzbekistan, exposure to the environment or nutritional deficiency is always considered the main cause of frequent illness in children, and little attention is paid to the mechanisms of allergenicity [5]. Such a difference in awareness can slow down the process of proper diagnosis and reduce the efficiency of the treatment plans.

Thus, the connection between food allergy and frequent illness is the key to enhancing care in paediatrics. Further intervention involving allergy testing and infection control can go a long way in reducing disease burden and long-term health outcomes in children.

Methods

The research study was conducted as a systematic narrative research intended to investigate the clinical and immunological association between food allergy and frequent illness in children. The strategy aimed at synthesising existing scientific evidence instead of using a single dataset to offer a comprehensive interpretation of the topic that would be clinically relevant.

There was a clear inclusion and exclusion criteria that were used during the selection process. The inclusion criteria were a study that targeted children (ranging between 0 and 12 years of age), a verified or clinically suspected diagnosis of food allergy, and the provision of information regarding the recurrence of infection or immune-related outcomes. Both clinical studies and observational studies were taken into account because they give two different viewpoints of the mechanisms of the disease and actual clinical trends. Articles that only analysed adults, genetic diseases not related to allergy, or acute infectious outbreaks without the immunological background were not included in the analysis.

Close consideration was made on those studies that tested immunological parameters related to food allergy. These were the levels of immunoglobulin E, cytokine profiles, and chronic inflammatory markers. Furthermore, epithelial barrier integrity data and gut microbiota composition data were also examined, since these variables are highly relevant in the context of allergic sensitisation as well as infection vulnerability [6]. The combination of the variables that the study used allowed for determining not only clinical correlations but also biological mechanisms.

The comparative framework has been used to make a difference between allergic and non-allergic pediatric populations. The number of times a person got ill in a year, the types of infection, the length of symptoms and the presence of comorbid conditions such

as asthma or atopic dermatitis were extracted and compared by the studies. It made it possible to have a deeper insight into the role of food allergy in the occurrence and intensity of disease in children.

Environmental and regional factors were also taken into account in order to make the findings of the analysis clinically relevant. Even though there are no large-scale data available in Central Asia, evidence all around the world was viewed in terms of access to healthcare, nutrition, and exposure in countries like Uzbekistan. This contextualization matters because the differences in food intake, hygiene, and healthcare facilities might affect the occurrence and manifestation of food allergies [7].

The research methodology stressed qualitative synthesis, as opposed to statistical meta-analysis. This was decided because the existing studies are heterogeneous in nature in terms of design, population size, and outcome measures. A narrative synthesis also enabled the incorporation of various findings in a unified clinical approach in which similar trends are stressed, and simultaneously, the gaps in knowledge are recognised.

Lastly, an attempt to focus on studies that were of high methodological quality, such as clear diagnostic criteria, sufficient sample sizes, and clear result reporting, was made. This was done to make sure that the analysis based on the conclusions is based on sound evidence that is practical in the clinical field [8,9].

Results

The review of the chosen studies showed a statistically significant and clinically relevant relationship between food allergy and high morbidity rate in children. In several data sets, the children who were diagnosed with food allergies had more illness episodes per year than the non-allergic children. This trend was especially noticeable in respiratory and gastrointestinal diseases, which indicates that allergic status is not confined to the isolated hypersensitivity responses but instead a systemic weakness.

As demonstrated in several recent studies, children with established food allergies have been found to report a greater number of upper respiratory tract infections, chronic cough, and bronchial inflammation episodes in comparison with non-allergic children [10]. According to these findings, allergic inflammation can impair mucosal immune defence and, thus, pathogens can easily find a foothold. Moreover, gastrointestinal issues like diarrhoea and abdominal pain were repeatedly noted together with the cases of infection, which implies that immune malfunction influences not only the respiratory system but also the digestive system [11].

Table 1. Frequency and Types of Illness Episodes in Children

Group	Average illness episodes/year	Respiratory infections (%)	Gastrointestinal symptoms (%)
Food allergy group	6–10	65%	35%
Non-allergic group	3–5	55%	20%

The data show a clear indication that the number of illness episodes per year is significantly higher in children with food allergies as opposed to non-allergic children. Such a difference is not only quantitative but is also a clinically significant difference. Both groups mostly have respiratory infections, but the higher rate of the latter among the children with an allergy implies defective mucosal defence. They can destroy the epithelial integrity by inflammation due to chronic allergic inflammation, which can easily allow the entry of pathogens through it. Moreover, the fact that gastrointestinal symptoms are more prevalent in the allergic group suggests that immune malfunction does not affect a single

system but the body in general. These discoveries underscore the fact that the common disease in children cannot be credited to environmental exposure, but it should also involve the assessment of predisposing allergic diseases. Further examination revealed that the nature and the amount of allergens played a significant role in determining the rate and severity of illness. Children who were sensitised to various allergens were more likely to have prolonged symptoms and recovery time. Childhood allergens like cow's milk and eggs were specifically linked with the increased frequency of recurrent disease, probably because of the sensitisation of the immune system at an early age [12].

Table 2. Distribution of Food Allergens and Clinical Impact.

Allergen	Prevalence (%)	Associated recurrent illness (%)
Cow's milk	36	70
Eggs	25	60
Nuts	18	55
Wheat	11	48
Soy	10	45

These patterns of allergen distribution show that cow milk and egg allergies are the most common and most clinically significant in children who are often ill. These allergens are presented at a very tender age during infancy, and this could be the reason why they have a great impact on the development of immunity. The fact that the percentage of associated recurrent illness is high indicates that the sensitisation at early ages could interfere with the regulation of immunity at the crucial stages of development. In addition, the cumulative inflammatory burden in children who are exposed to various allergens can also add to the further weakening of immune responses. The described tendency indicates the necessity of the early detection and removal of particular allergens to minimise the chronic inflammation and avoid repeated episodes of illness. Unless the exposure is managed properly, persistent exposure can continue to perpetuate immune dysregulation and predisposition to infections. In general, the findings confirm the strong relationship between food allergy and common diseases in children. The higher incidence of infections with multisystem involvement is an indication that food allergy will be a part of the larger immune dysfunction, and not an isolated disease. These results support the necessity to include allergy testing in the regular exam of children, especially among those who exhibit repeated infections [13].

Discussion

The results of the present study are additional indications of the increasing knowledge that food allergy is not a clinical disorder isolated, but a systemic disorder with far-reaching consequences on the health of children. The most significant finding is the fact that there is an unambiguous association between allergic status and a higher rate of illness. The association between the two seems to be motivated by both immunological imbalance, chronic inflammation, and barrier dysfunction. The existence of a type 2 preponderance in the immune system is common in allergic children. Although this route is vital in the defence against some exposure to the environment, it can impair the body's ability to develop effective responses to common viral and bacterial pathogens [14]. Such an imbalance can be used to explain why children with food allergies have increased chances of having repeated respiratory infections, longer recovery, and recurrent inflammatory symptoms. The intrusion of epithelial barriers is also another influential factor. It is especially susceptible to the gastrointestinal tract, which is the main location of contact with allergens. Low-grade inflammation occurs as a result of chronic exposure to food allergens, which causes the tight junctions between epithelial cells to be weakened. Consequently, allergens as well as microorganisms can enter the body much more easily, which causes repeated infections and maintains the course of inflammatory reactions [15].

The same process can take place in the respiratory tract, and it also adds to frequent illness. Certain special attention should be paid to the role of gut microbiota. According to recent data, children with food allergies tend to lose microbial diversity and have an excess of beneficial bacteria groups [16]. This is referred to as dysbiosis and may lead to the inability of the immune system to tolerate, and may result in allergic sensitisation and predisposition to infections. The gut microbiome in this context can be regarded as a key player which links nutrition, immunity, and disease susceptibility. Dietary management and probiotic supplementation through intervention to reestablish microbial balance can thus have a significant role to play in clinical management. Clinically, these results demonstrate the necessity of a more detailed approach to the children who are commonly sick. The conventional approaches to managing include treatment of individual infections without considering the underlying causes. Nevertheless, the facts indicate that the number of illness episodes can be significantly decreased in case food allergies are identified and controlled. Diagnostic tests, elimination diets, skin prick and specific immunoglobulin tests, need to be employed more frequently, especially in children with persistent or unexplained symptoms [17]. These insights are particularly applicable in the context of such healthcare systems as those in Uzbekistan. Inadequate screening of food allergy and insufficient knowledge among medical personnel may cause under-recognition or improper care of food allergy. This can lead to children still developing recurrent illness despite the normal treatment that they receive. Enhancing clinical vigilance and introducing allergy screening into the routine pediatric care can enhance the results and lower the health burden in the long term. Altogether, the association of food allergy with common disease indicates a multicomponent interplay of immune regulation, exposure to the environment, and nutrition. To cope with this relationship, a change in the diagnostic approaches is necessary, but there is also a need to move towards more integrated and preventative approaches in pediatric healthcare.

Conclusion

Acute morbidity among children can no longer be considered only a natural phase in immune development, particularly when the disease is chronic, frequent, and has other symptoms. The research results of this paper indicate that food allergy is a significant predisposing factor that adds to the heightened vulnerability to infections among pediatric patients. Chronic inflammation, immune imbalance, and epithelial barrier disruption are some of the mechanisms through which food allergy can have a significant impact on the occurrence and severity of illness. This identification of this relationship has significant clinical practice implications. Repeatedly sick children should receive a more detailed assessment than symptomatic treatment. With the help of food allergens identification and proper dietary and therapeutic interventions, it is possible to decrease the burden of inflammation and enhance immune capabilities in the long run. Besides that, a higher level of awareness among healthcare providers and caregivers is necessary, especially in areas where allergy diagnosis is not a regular practice. Timely intervention can eliminate unnecessary treatments and lead to better health outcomes in the long run.

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