Clinical Update

Allergic Diseases, Quality of Life, and the Role of the Dietitian

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Allergic diseases including food allergy, atopic dermatitis, asthma, and allergic rhinitis are among the most common diseases clinicians encounter in their practices. All of them significantly impact the quality of life of patients and families and create a financial burden on society. Food allergy is the most common cause of anaphylaxis, a serious and potentially fatal systemic allergic reaction in nonhospitalized children. Atopic dermatitis is the most common chronic skin disease in children and precedes asthma and allergies in a significant number of patients. Nutrition education for patients and families dealing with these diseases can help prevent life-threatening allergen exposures and make day-to-day management less problematic and stressful. The dietitian can also set realistic goals and expectations for patients and families, provide them with the tools to better manage their disease, and ensure that the quality of the diet is maintained. Nutr Today. 2008;43(1):6–10

Food Allergies

A reported 6% to 8% of young children have food allergy, with cow’s milk protein allergy as the most common followed closely by egg allergy. The prevalence of some food allergies, especially peanut, has been increasing. Because treatment of food allergy is currently limited to the prevention of accidental ingestion, affected children and their families live in a state of constant vigilance and fear. Activities of daily living are complicated by time-consuming reading of food labels and concerns for contamination of foodstuffs in various settings and accidental exposures that may occur in school, childcare, and social settings. Feeding children who have multiple food allergies is complex, with an even greater burden to the caregiver in searching and finding safe foods for the child to eat. Food allergy is the most common cause of anaphylaxis (systemic life-threatening allergic reaction) outside the hospital setting.

Researchers at Mount Sinai Hospital in New York developed a questionnaire for people with food allergy for measuring its impact on quality of life. They showed that the general health perception and emotional impact on parents and caregivers compared to those of the general population are similar for food allergy and a number of other chronic diseases. The negative impact on the quality of life of children with peanut allergy was greater than in children with type 1 diabetes. Children with peanut allergy and children with type 1 diabetes were surveyed about factors related to anaphylaxis and hypoglycemic events. Fear of a reaction, worrying about a reaction, and feeling more restricted...
in general activities were greater in children with peanut allergy. Families of children with peanut allergy showed comparatively greater disruption in their daily activities and impairment and strain on social relationships than did families of children with rheumatological disease such as juvenile rheumatoid arthritis.

Nutrition education is essential to manage food allergy and decrease related fear and anxiety. Allergists can provide introductory education when food allergies are diagnosed. In-depth education for successful avoidance of food allergens, replacement of these foods in the diet, and maintenance of adequate nutritional intake while avoiding food allergens is best provided by a registered dietitian. Teaching patients and families to understand food ingredient labels and recognize terms that indicate the presence of an allergen is crucial to establishing successful allergen avoidance.

Identifying foods that contain specific allergens and providing appropriate substitutes for these foods enable individuals with food allergy to maintain an adequate dietary pattern. Dietary intake and total energy consumed may be reduced when multiple food allergens are removed from the diet. Patients and parents need to understand how to replace the missing nutrient sources. Nutrient deficiencies to consider include the following:

- Calcium and vitamin D adequacy with avoidance of milk and/or soy products. Alternative calcium sources may include age-appropriate formulas, fortified rice milk, soy products, fortified cereals and juices, and supplements when needed.
- Protein adequacy with avoidance of multiple meats, legumes, dairy, and/or nuts. Alternate sources such as protein-rich formulas, dairy products, soy products, or allergen-reduced protein powders may be considered.
- Energy adequacy with avoidance of wheat products alone or wheat and other grains. Consider alternative carbohydrate and energy sources, including rice, oat, barley, corn, quinoa, buckwheat, tapioca, and potato products.
- Fat adequacy with avoidance of full-fat dairy products and/or meat sources. Fat replacements such as refined oils and milk-free margarines can be recommended.

Recipe substitutions are also a valuable tool for the individual with food allergy. Some families benefit from recommendations from food allergy cookbooks, and understanding simple recipe substitutions for their child’s allergy can allow families to continue using their long-time favorite recipes. For example, using applesauce to replace an egg or using soy milk instead of cow’s milk allows the family to maintain favorite recipes or add new recipes to bring variety into a child’s diet. Nutritional counseling with a registered dietitian provides an opportunity to educate parents on the timing of introducing to their infants foods that may reduce the risks of developing additional food allergies. The American Academy of Pediatrics recommends that children at high risk of allergy avoid solid foods until 6 months of age and that the introduction of dairy be delayed until 1 year; egg, until 2 years; and peanut, tree nuts, and fish, until 3 years of age. Having a family history of any allergy (not limited to food allergy) places a child at risk of developing food allergies. Recognizing this risk and educating parents on age-appropriate food introductions, precautionary avoidance of certain foods during pregnancy, and benefits of breast-feeding may possibly reduce the risks of development of food allergy.

Educating patients and parents to read labels, call product manufacturers when information is unclear or unavailable, use food allergy resources, and respond quickly to food allergy reactions provides an enhanced sense of security for these families who otherwise may struggle with many normal daily interactions. For example, patients or care providers may not recognize casein as a milk protein, ovalbumin as an egg protein, or that “textured vegetable protein” can be soy protein. They may also not know that the canning process breaks down fish protein and that canned tuna could be eaten by a person allergic to fish.

**The most common chronic skin disease in young children is atopic dermatitis.**

**Atopic Dermatitis**

Atopic dermatitis is the most common chronic skin disease in the pediatric population. The prevalence of AD has continued to increase, with a lifetime prevalence of approximately 17% in US school children. As surveyed in general pediatric practices in the United States, one-third of children with AD have food allergies. More than half of these children go on to develop asthma and allergic rhinitis.

Atopic dermatitis is characterized by intense itching and, at times, painful irritated skin. Importantly, AD is more than just an itchy rash. Many children will scratch themselves to the level of abrasion, and this results in sleepless nights for both patient and parents. This pattern adversely affects not only the child’s quality of life but also that of the entire family. The chronic scratching may lead to lichenified skin (accentuated skin lines or
markings resulting from thickening of the epidermis) or prurigo nodules (inflamed papules), which can be disfiguring and result in social difficulties. The psychosocial impact is greater than that in psoriasis and even type 1 diabetes mellitus. Atopic dermatitis is an important cause of school absenteeism and occupational disability, and it may impact vocational choices.

Sleep disruption is a serious problem associated with this disease, affecting both patients and their families. Loss of sleep has been estimated to be 2.6 hours per night for parents and approximately 2 hours for the infant or child. The effect is not only loss of total sleep time but also sleep fragmentation, so that the normal sleep cycle is disrupted. Sleep disruption is associated with behavioral problems such as difficulty in waking up for school and staying awake in the afternoon as well as with general discipline problems. Sleep disturbance may persist even when AD is in remission.

Atopic dermatitis has a financial impact as well. In 1997, Su et al found that the personal financial burden due to AD measured through the cost of medication, treatments, physician visits, hospitalizations, and parental loss of salary for days off ranged from $238 for mild illness to $997 for a family with a child with severe illness per year. The total cost of treatment in the United States is conservatively estimated at $364 million annually. Third-party payer cost of illness for AD/eczema is about $3.8 billion for people younger than 65 years in the United States. More effective intervention may lessen these financial burdens.

There are new treatments available beyond the standard topical steroid medications. The effect on quality of life of these new treatments has been studied. In a study comparing a topical nonsteroid calcineurin inhibitor versus vehicle control (an identical preparation, usually a cream or ointment without the active ingredient), patients who were treated with the calcineurin inhibitor tacrolimus ointment fared better in pain, self-consciousness, school performance, teasing, and sleeping pattern. A 6-month multicenter trial of children treated with a topical calcineurin inhibitor also showed significant improvement in the areas of sleep, leisure activities, family relationships, and emotional distress of the caregiver. Caregiver and child productivity improved significantly after 6 months of treatment, with less missed work and time at school and better school performance for children. Consistent application of a cream or ointment often results in a 20% to 30% clinical improvement for patients with AD. Therefore, even basic but consistent care and follow-up will improve the patient's and family's lives.

There are a number of ways that the dietitian can help patients with AD. Many of these children have concomitant food allergies. Patients with AD often have multiple positive skin or blood tests to food allergens that may not be clinically relevant. In fact, the predictive value of a positive skin test to a food allergen is only slightly higher than 50%, whereas the predictive value of a negative test is much greater. Therefore, patients who have multiple positive allergy tests are often put on unnecessary restrictive diets that may negatively impact their nutritional status. The dietitian can assist the patient and family in sorting out this challenging problem.

Difficulties such as sleep disturbance and chronic itching lead to disrupted eating schedules. Foods and beverages may be used for rewards and comforting and calming measures. In some children, excessive fluid intake can lead to decreased food intake and poor overall diet quality. In others, foods offered as comfort measures provide extra energy and replace more nutritious food choices in the diet. A diet recall or food record to gain an understanding of a patient's fluid intake, meal and snack schedule, and foods commonly eaten will identify trends and serve as a guide to counsel families.

Ultimately, what may be more important in improving outcomes is establishing trust and long-term relationship with the team of healthcare providers; such relationships impact adherence with the complex treatment regimen prescribed.

Asthma

Asthma is the most common chronic disease during childhood, affecting more than 6 million children younger than 18 years in the United States. Despite advances in the understanding of asthma, associated morbidity and mortality have increased over the past decade. Hospitalization rates for asthma are highest among African Americans, and death rates are highest among adolescent and young adult African American males. The burden of asthma on society is 14 million missed school days, 3.5 million physician visits, 658,000
emergency department visits, and 203,000 hospitalizations annually.17

Juniper et al18 have described the functional aspects of the disease, such as shortness of breath, chest tightness, wheeze, cough, and fatigue, that result from asthma and the impact on quality of life. Asthma also impacts exercise, activities with friends, play, having pets, sleeping habits, and school activities. Asthma causes frustration, anger, fear, anxiety, and feelings of social isolation.18 There is a correlation between greater difficulty in controlling symptoms and greater emotional discomfort, poor self-esteem, and negative quality-of-life factors.19

Dietary concerns for the patient with asthma arise with long-term or high-dose oral steroid use. Common nutritional considerations due to long-term steroid use include increased calcium and vitamin D requirement and associated low bone density20 and increased protein needs and appetite leading to weight gain. Working with patients to identify the usual calcium and vitamin D intake will assist the dietitian in recommending changes to improve intake and status. Patients with established dairy intake may require only 1 additional serving per day, but patients who dislike milk or have an allergy or intolerance to dairy products may require calcium and vitamin D supplements to meet their needs. Weight gain with steroid use may be complicated by a decrease in physical activity that may accompany difficulty in controlling asthma. These factors make the dietary consult a valuable resource to review eating and activity patterns and identify methods by which the patient can modify his or her lifestyle to improve health.

Allergic Rhinitis

Allergic rhinitis occurs with prevalence increasing during childhood and peaking in postadolescent years. Characterized by recurrent sneezing, nasal congestion, rhinorrhea, and pruritus of the nose and eyes, it may be intermittent or persistent. Frequently, it coexists with asthma and chronic sinusitis. This allergic disease can impact a child’s quality of life and school performance and attendance.21 A child’s sleeping and eating schedule can also be disrupted. Meeting with families to identify nutritional concerns can help minimize additional health risks. Dietitians can assist this population through a review of the dietary pattern and recommendations for improved dietary habits to more effectively meet nutritional needs for optimal health.

Summary

Despite advances in the understanding of disease processes and development of safer and more effective therapies, allergic diseases have increased globally, resulting in significant morbidity and mortality. Each of the allergic diseases discussed can have a significant impact on the child’s and family’s quality of life. Having several allergic diseases negatively impacts physical, social, and emotional functioning to a greater extent than when the child exhibits only 1 allergic disease. Nutrition education for patients and families dealing with these diseases can help prevent life-threatening allergen exposures and make day-to-day management less problematic and stressful. The dietitian can also set realistic goals and expectations for patients and families, provide them with the tools to better manage their disease, and ensure that the quality of the diet is maintained.

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REFERENCES


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Diabetes Rates Are Increasing Among Youth

Although most children and young adults with diabetes have type 1 diabetes, soaring obesity rates are making type 2 diabetes, a disease that used to be seen primarily in adults older than 45 years, more common among young people. To help them and their parents, the National Diabetes Education Program (NDEP) is introducing a new series of tip sheets and an online quiz especially created for teenagers to help them manage their disease and reduce their risk for complications. The National Institutes of Health and the Centers for Disease Control and Prevention are jointly sponsoring NDEP.

About 154,000 youth younger than 20 years have diabetes in the United States. According to the data reported by the Centers for Disease Control and Prevention in 2006, 1 in 523 people younger than 20 years has diabetes. Among this group, 79% are aged 10 to 19 years.

The new “Tips for Teens With Diabetes” series of NDEP, which encourages youth to manage their disease for a long, healthy life, includes topics such as “What is Diabetes?” “Be Active, Make Healthy Food Choices, Stay at a Healthy Weight,” and “Dealing With the Ups and Downs of Diabetes” (visit http://ndep.nih.gov/diabetes/youth/youth.htm). Also, NDEP has a tip sheet addressing teenagers at risk of type 2 diabetes, called “Lower Your Risk for Type 2 Diabetes.” In addition, NDEP has developed an interactive online quiz for teenagers with diabetes based on information found in the tip sheets, using a question-and-answer format, with direct links to the new series of tip sheets. All of the tip sheets are available at no charge from NDEP.

The new resources of NDEP support youth with diabetes and their families to ensure their health and well-being now and into adulthood. For more information about NDEP’s free resources for children and teenagers, visit www.YourDiabetesInfo.org or call 1-888-693-NDEP (6337).

Source: National Institutes of Health