The Peanut Allergic Patient: Diagnosis, Treatment, and Prevention

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ABSTRACT

The prevalence of peanut allergies (PAs) continues to rise through recent decades, despite the best attempts to reverse that trend. PAs are unpredictable and can be life-threatening. Therefore, it is imperative that nurse practitioners (NPs) are fully aware of the most recent guidelines and evidence regarding diagnosis, treatment, and prevention of PAs. This article presents information on the current research in the diagnosis and treatment of PAs as well as the latest guidelines established to prevent PA development. NPs should understand this information, allowing them to provide the best care possible for their patients.

Keywords: diagnosis, immunotherapy, peanut allergy, prevention guidelines, treatment

While playing at a friend's house, an 11-year-old boy was offered a snack, a pretzel filled with peanut butter. After realizing what he had bitten into, he immediately spat it out, knowing he was severely allergic to peanuts. His mother was notified and rushed over with an epinephrine injection. Unfortunately, her response was too late. This boy passed away from an anaphylactic reaction to peanuts resulting in cardiac arrest.[1]

Sadly, lethal situations like this one occur periodically as peanut allergies (PAs) become more prevalent. The most recent United States estimate of PA prevalence is 2% according to a parent-reported survey.[2] However, a 2014 study in Massachusetts found 4.9% of their sample tested positive for PAs.[3] PAs typically develop in the first years of life, and remission is unlikely; only 20% will outgrow their allergy by the time they start school.[2,4] Additionally, the likelihood of the resolution of PAs is much lower than the resolution rate of other allergenic foods.[2]

A PA diagnosis can be frightening and life-threatening. Consequently, a PA alters what one eats and creates anxiety for people with PAs, their families, and friends.[5] Some countries require precautionary advisory labels to indicate any possibility of the product containing peanuts, yet these labels may be inconsistent and inadequately represent the possibility of peanut contamination.[6] Other methods to promote public safety include increasing the awareness of PAs and implementing policies and practices that improve safety at schools and early care/education programs.[7] Despite strategies to cope with PAs and minimize exposure, a risk of accidental exposure remains.

Avoidance has been the only recommendation over the past several decades.[8] However, recent studies show promise in the effectiveness and safety of oral immunotherapy (OIT),[9] sublingual immunotherapy (SLIT),[10] and epicutaneous immunotherapy (EPIT).[11] Additionally, improved diagnostic testing provides more accurate results while minimizing risk.[12]

Because of the increasing PA prevalence,[3] nurse practitioners (NPs) should understand PA development, the available tests and treatments, and the associated risks. With this knowledge, NPs can educate patients about appropriate management and help them cope with their allergy.

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The purpose of this clinical feature is to present what NPs need to know about their role in the care of PA patients. Specifically, it includes an overview of PA development, typical history and physical examination (PE) findings, the latest research on effective diagnostic and treatment techniques, the latest guidelines on preventing PAs, and tips for teaching patients and families.

DEVELOPMENT OF PA

Understanding allergy development may reveal a pathway to prevention. Several theories attempt to explain PA development, yet the exact cause remains unknown. Theories include the hygiene hypothesis,[13] maternal-fetal pathway,[14] external exposure,[15] and the dietary hypothesis.[13]

According to the hygiene hypothesis, improved sanitation minimizes exposure to bacteria and viruses, which previously strengthened immune systems. Without these exposures, some people react against nonharmful agents[13] like peanuts.

The maternal-fetal pathway hypothesizes initial exposure to peanuts occurs in utero and/or through breastfeeding, causing infants as young as 4 months old to test positive to peanuts.[14] In contrast, maternal ingestion of allergenic foods during pregnancy provides protection against midchildhood allergies.[3]

According to the external exposure theory, exposure occurs through inhalation or compromised skin.[15] If peanut exposure occurs at the compromised site, the immune system might recognize peanuts as an offending agent and react in subsequent exposures.

The dietary hypothesis is based on differences between Western and Mediterranean diets. The Mediterranean diet provides exposure to various foods, including peanuts, which theoretically helps the immune system recognize harmful agents.[13] For example, children in the United Kingdom have a PA rate 10 times higher than their Israeli counterparts, who began consuming peanuts earlier in life.[16]

CLINICAL PRESENTATION

History of Present Illness

The integumentary, cardiopulmonary, and gastrointestinal systems are most commonly affected with food allergies.[8] Therefore, patients with a PA typically present with a history consistent with allergic reactions including complaints of itching; rashes; hives; swelling; wheezing; coughing; voice changes; or gastrointestinal issues including nausea, vomiting, and diarrhea. The timing of symptoms after ingestion is also important. A PA is a type 1 immunoglobulin E (IgE)-mediated response, and symptoms occur rapidly after exposure, usually only minutes later.[14,15] The amount of peanuts consumed contributes to the severity of the reaction.[15] Other cofactors that can influence the reaction threshold and severity include recent exercise, current medications, and comorbid conditions.[8,12]

Past Medical and Family History

Patients with a family history of PAs and/or concurrent diagnosis of eczema or asthma are at increased risk for developing a PA. Eczema, asthma, and food allergies are often concurrently diagnosed because of an atopic gene.[8] PAs develop in 25% to 30% of patients with a strong atopic history.[12] Similarly, 90% of people with PAs have a history of eczema, asthma, rhinitis, or other food allergies.[15] Thus, NPs should ask about these conditions or symptoms in patients and family members. A concurrent diagnosis of a PA and asthma, particularly if undertreated, increases the risk of an anaphylactic reaction.[15] Additionally, patients with asthma have an increased likelihood of a severe reaction during oral peanut challenges.[17]

Physical Examination

Patient history should be the primary cause to suspect a PA because PE findings may be unremarkable at the time of evaluation. NPs should evaluate all systems affected by an allergic reaction, including integumentary, cardiopulmonary, and gastrointestinal, because some symptoms may be overlooked by the patient/family. Information gathered from the history of present illness, past medical and family history, PE, and timing of reaction help an NP decide whether to order diagnostic testing or refer to a specialist who is a provider trained and experienced in diagnostic testing, the associated risks, and how to manage them.[18]

DIAGNOSIS

Early, accurate diagnosis is imperative because anaphylaxis is more common in PAs than other foodborne allergies.[6] Diagnostic tools include oral food challenges (OFCs), skin prick testing (SPT),