

EDITORIAL

Clinical & Experimental Allergy

Peanuts for preschoolers: less preposterous than previously perceived?

This editorial discusses the findings of the paper in this issue by Johanssen et al. [14] pp. 994–1000.

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The dangers of peanut allergy are well-known to allergists [1]. Peanut-induced reactions can be triggered by ingestion of very small amounts [2–4] and peanut is the most common allergen to induce fatal or near-fatal anaphylaxis [5, 6]. Moreover, its prevalence appears to be increasing at an alarming rate [7–9]. It has been observed that this increasing prevalence has at least partially occurred during a period when medical authorities [10] have advised delayed dietary introduction of peanut to infants and young children, which has since been rescinded [11, 12]. In fact, the literature suggests that delaying peanut introduction [13] may be a risk factor for development of peanut allergy.

As allergists, we are familiar also with the quandary of evaluating young children who have yet to ingest (at least knowingly) peanut or peanut products due to family history or parental anxiety. It is not uncommon to observe positive skin tests to peanut in these children, and despite lacking a history of prior ingestion or reaction, strict avoidance is generally prescribed. This is partially due to the fact that criteria for predicting peanut allergy for this age group have not been established. Furthermore, oral challenges in these young children may be considered more risky to perform because these toddlers are less able (compared with older school-aged children) to articulate more subtle subjective symptoms. The success of the challenge also is dependent upon the toddler's willingness and ability to eat on command. Hence, this age group is one that is less frequently challenged to peanut.

In this issue, Johanssen et al. [14] performed oral food challenges to peanut in 49 preschool-aged children < 5 years of age (with a median of a little over 3 years). They

all had sensitization to peanut (defined as having a skin prick test [SPT] weal size of 2 mm or greater or serum peanut-specific IgE level of 0.35 kUA/L or greater) but without a history of prior known ingestion. Only about 50% of this cohort developed symptoms during the 11 g peanut challenge. Risk factors for reactions included having a SPT weal size of over 7 mm on the day of the challenge and/or a serum peanut-specific IgE level greater than 2.0 kUA/L. Given that these were young children sensitized to peanut but had had no prior known ingestion, the relative risk for potential reactions was lower than if they had a prior history of allergic symptoms. However, nearly one-third of the cohort was below 2 years of age, the youngest being 10 months old. The risk of performing peanut challenges in children under 1–2 years of age is not known. The authors conclude from their results that having both a SPT < 7 mm and peanut IgE < 2 kUA/L identified children < 5 years of age who were most likely to be able to 'tolerate' peanut with only a 5% chance of failing the oral challenge. The authors observed that among those subjects with both a SPT < 7 mm and peanut IgE < 2 kUA/L but having a positive challenge test, there were no cases of anaphylaxis, although the number of reactions were too small to make generalizations to larger populations. Very similar cut-off values (SPT of 6.7 mm or peanut IgE of 2.20 kUA/L) were found to correspond to a 50% predicted probability of a positive challenge. These cut-off values, according to the authors, essentially identify subjects to be considered for oral food challenge tests.

The challenge procedure used in the referenced study deserves further investigation as it differs from that recommended by the Work Group Report [15] and those used in other studies, having potential implications on the conclusions. Tolerance was defined as being non-reactive to 11 g of peanut butter (equivalent to 1.9 g of peanut protein), which is significantly less than that recommended by the Work Group Report [15] on oral food challenge testing. The Adverse-Reactions-to-Food

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Committee of the American Academy of Allergy, Asthma & Immunology [15] suggests using 30 g of peanut (equivalent to 8–9 g of peanut protein) for oral food challenges. Perry et al. [16] in the United States used from 4 g of peanut protein in children < 5 years of age whereas 15 g of finely chopped peanuts were used in a British study [17]. Another Australian study [18] utilized 12 g of peanut (form not specified). Of note, the median age of these other cohorts was over 5 years of age. If a higher dose of peanut was used in the oral challenges in this study, the authors might have found a lower number of subjects labeled as tolerant, and thereby tolerance rates may have been overestimated. On the contrary, eight subjects were defined peanut-reactive due to symptoms developing during topical application of peanut, which is not a recommended step in the oral challenge test as per the Work Group Report [15], and in fact some of these subjects might have tolerated oral peanut exposure, thereby underestimating the true rate of tolerance. The authors do report that 'tolerance' was classified as having completed the 11 g peanut challenge without reacting and 'remaining tolerant' at their follow-up clinic appointment 2–4 weeks later. Although they advised continued weekly introduction of peanuts, it is not specified as to whether these families complied. However, there was no mention by the authors of any subsequent peanut-induced reactions.

Although it is tempting to conclude based on the findings of Johannsen et al. [14] that challenges should be considered at a much earlier age (< 5 years), lack of data in this age group warrants caution. As the authors indicate, most fatal and near-fatal food anaphylaxis occurs in older children and young adults [5–6], although this may be more reflective of increased independence and risk-taking behavior than a pure effect of age. However, it has been reported that reactions generally worsen as children get older and with development of asthma [19].

In a study of 1273 oral food challenges [20], we noted that severe reactions requiring administration of epinephrine occurred more often in older patients (median 7.9) than those allergic reactions, which were not anaphylactic (median 5.8 years). However, this study population was markedly older (median 5 years, range 1.25–18) than that of Johannsen et al. [14]. Furthermore, in our study [20] peanut was more likely to induce severe reactions, including anaphylaxis, requiring epinephrine administration. The rate of anaphylaxis in infants is unknown, but it is likely underdiagnosed because the presentation may be atypical and non-specific (lethargy, cyanosis, fussing, irritability, seizures, drowsiness, regurgitation) [21] and because infants are unable to report subjective symptoms and cardiovascular symptoms as blood pressure is infrequently reported [22]. Therefore, the risks of oral feeding tests in infants and young children are currently unknown. Data in this age group is largely lacking with regard to oral food challenges, specifically to peanut, as infants, and toddlers have been considered a less desirable target for feeding tests.

It is extremely important to determine whether children are potentially unnecessarily avoiding peanut. Strict food avoidance is extremely difficult and has a significant impact on socialization and quality of life [23–26]. Furthermore, strict avoidance with inadvertent environmental exposure via a normal route may predispose to development of peanut allergy [27]. This study highlights that performing oral challenges to peanut in a young but otherwise relatively low-risk group of children can be performed safely and with good outcomes. Still, the added benefits of introducing peanut early in life can only be speculated upon at this point in time. Definitive conclusions cannot be drawn nor recommendations made on the appropriate age of peanut introduction until more clinical data becomes available (<http://www.leapstudy.co.uk>).

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