Research Article

Infant Feeding Practices and Nut Allergy over Time in Australian School Entrant Children

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Aim. To measure the association between infant feeding practices and parent-reported nut allergy in school entrant children.

Method. The Kindergarten Health Check Questionnaire was delivered to all 110 Australian Capital Territory (ACT) primary schools between 2006 and 2009. Retrospective analyses were undertaken of the data collected from the kindergarten population. Results. Of 15142 children a strong allergic reaction to peanuts and other nuts was reported in 487 (3.2%) and 307 (3.9%), children, respectively. There was a positive association between parent reported nut allergy and breast feeding (OR = 1.53; 1.11–2.11) and having a regular general practitioner (GP) (OR = 1.42; 1.05–1.92). A protective effect was found in children who were fed foods other than breast milk in the first six months (OR = 0.71; 0.60–0.84). Conclusion. Children were at an increased risk of developing a parent-reported nut allergy if they were breast fed in the first six months of life.

1. Introduction

Peanut sensitisation and allergy in children is increasing both in incidence and prevalence in various parts of the world [1–3] although no studies to date have demonstrated this trend in Australian children.

The evidence of the role of infant feeding practices in protection against, or causation of, peanut allergy is inconclusive. Despite breast feeding being recommended as the sole source of nutrition for the first 6 months of life [4], an increasing number of studies have implicated breast feeding as a cause of the increasing trend in nut allergy [5–7].

The timing of introducing complementary foods, including foods and/or fluids other than breast milk to infants, has changed over the last 50 years. In the 1960s, most infants had been exposed to complementary foods by 4 months of age. By the late 1990s, expert guidelines recommended delayed introduction of complimentary foods such as solids until after 6 months of age [8, 9]. Delayed introduction of complimentary foods has been challenged by recent population studies which suggest that the current practice of delaying complementary foods until after 6 months of age may increase rather than decrease the risk of allergy [10–15].

Understanding how infant feeding practices might influence the risk of children developing nut allergy is of particular importance given that peanut allergy accounts for two-thirds of all fatal-food induced anaphylaxis [16].

This study measures the association between infant feeding practices and peanut (and other nut) allergies in school entrant children in the Australian Capital Territory (ACT) between 2006 and 2009.

2. Method

All new entrants to primary schools with parent-reported nut allergy were selected from those who took part in the ACT Kindergarten Health Check between 2006 and 2009. The Health Check Questionnaire (HCQ) has been described elsewhere [17]. Data are collected on the child’s demographics and parents are asked to report on a variety of health issues in their child. Of the 17401 HCQ sent between 2006 and 2009, 15258 (88%) HCQ were completed and parents of 15142 children consented to the data being used for research purposes.

A positive response to the question “Has your child ever had a strong allergic reaction to peanuts/peanut products,
3. Results

The HCQ was delivered to all 110 primary schools in the ACT. Parents of 15142 children completed the HCQ and consented to the data being used for research purposes. Parents reported that 487 children had allergy to peanuts and 592 to peanuts and/or other nuts. The overall prevalence of reported nut allergy was estimated as 3.9% (95% CI: 3.6–4.2%) and the prevalence of reported peanut allergy was 3.2% (95% CI: 2.9–3.5%).
with current evidence depicting Australia as part of a global
trend of increasing nut allergy [1–3]. The prevalence of nut
allergy for five-year-old children in the ACT is 3.9%, with
peanut allergy accounting for 3.2%, which is almost twice the
prevalence of British school entrant children (1.8%) [18].

Australian guidelines do not recommend avoiding foods
in pregnancy or lactation for preventing allergic disease in
infants [19]. These recommendations are made on the best
available evidence at the time of writing, however, emerging
evidence has proven that maternal diet during lactation is a
route of allergen exposure which may result in sensitisation
[20–23]. In several studies, maternal ingestion of peanut
during pregnancy or lactation was shown to increase the risk
of peanut allergy [21, 22]. Furthermore, in a case study of
an allergic reaction to peanut in an exclusively breast fed
two-week-old boy, it was concluded that the clinical
symptoms of allergy could only be explained by occult
ingestion through breast milk rather than environmental
exposure [5]. In a study of 122 children with nut allergy, it
was noted that 83% of these children were breast fed and that
over 90% of the mothers admitted to ingesting peanut during
lactation [24].

Our study found that almost 90% of children were
reported to have been breast fed as infants and that over
4% of these children were reported to have a nut allergy. Of
the remaining 10% of children who were reported not breast
fed, parent-reported nut allergy prevalence was 2.72%—the
likelihood of developing a reported nut allergy was 1.5 times
higher in breast fed children than in nonbreast fed children.
These findings are replicated in earlier studies which also
concluded that nut allergy was more likely in children who
had been breast fed [25].

These results contribute to the argument that breast
feeding by itself does not appear to be protective against nut
allergy in children, and that it may in fact be causative of
allergy [5–7].

We observed an increasing trend in prevalence of
parental-reported nut allergy between 2006 and 2009
confirming the findings of previous studies [1, 2]. This may
be a reflection of increased consumption of peanut and
peanut products by pregnant and nursing mothers [26]. It
has also been argued that peanut sensitisation may occur via
other subtle environmental routes, such as the application
of peanut oil containing lotions to the child or the breast
feeding mother [27], however, this argument is controversial
[28].

Other infant feeding habits were also analysed in this
study. We found that children fed only foods other than
breast milk before six months were least likely to develop a
parent reported nut allergy (OR = 0.63; P = 0.009)
compared with children who were exclusively breast fed (OR = 1.43; P = 0.000). Children who were both breast fed and given other foods and/or fluids before six months were also protected (OR = 0.83; P = 0.025). The minimisation of the occult exposure of allergen that may occur with breast milk and the unknown maternal ingestion of peanut products may explain our result [5, 20]. Our findings are consistent with several studies which concluded that early introduction (prior to 4 months age) of complementary food was associated with a reduced risk of peanut sensitisation [29] and eczema in children with allergic parents [30] and that a more diverse diet of solids before 4 months was associated with a lower risk of sensitisation at 6 years [15].

Furthermore, prolonged breast feeding has been shown to increase the odds of developing peanut allergy by almost 3 times that of children who were weaned at or before 6 months [27]. Our study results concur, finding a parallel between longer breast feeding time and an upward trend in parental reported nut allergy.

Our study results also confirmed our previous finding of a positive association between parental reported nut allergy and the child having a regular GP [25]. We speculate that children with an allergy are more likely to see a regular GP for diagnosis, follow-up, and prescription for adrenalin if the allergy is severe.

Limitations in this study include inconsistency in interpreting the words “strong reaction” in the HCQ. Parents may have interpreted the words “strong reaction” in the screening question to mean either a reaction to a diagnostic test or a clinical reaction. Also, the study design does not allow causality to be inferred. Finally, data were collected four or five years after infant feeding habits had ceased—accuracy of recall impacts upon results. A strength of this study is that the data describe the association between breast feeding and parent reported nut allergy in a sample population that is highly representative of the ACT community of school entrant children. The large sample size, number of years of data collection and high response rate has reduced the chance of random error. However, there is the possibility of over-representation of a Caucasian population in the ACT and hence extrapolation of these findings onto ethnic populations is not appropriate.

5. Conclusion

Children who were breast fed in the first six months of life were at an increased risk of developing a parent-reported nut allergy. A protective effect against parent-reported nut allergy was found in children who were given food/fluid other than breast milk before six months either exclusively or in combination with breast milk. There was a positive association between parent-reported nut allergy and having a regular GP. With the rate of parent-reported nut allergy in a highly representative sample population being 1 in 25 and peanut allergy being 1 in 30, there is a need for further research in this field. The scarce and often contradicting evidence regarding nut sensitisation and infant feeding practices demands particular emphasis.

References


