

Can We Prevent Allergy?

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Background

- Food allergy in children
 - 3-6% western countries
- UK breast-fed infants (*Perkin et al NEJM 2016*)
 - 7.1% food allergy
 - 1 in 20 egg allergy
 - 1 in 40 peanut allergy
 - Early onset eczema- 1 in 5 peanut allergy by 5 years



Background

- Peanut allergy prevalence has quadrupled in the last 13 years (Gruchalla and Sampson 2015)
- Leading cause of anaphylaxis and death in USA
- Previous policies have included avoidance in pregnancy and infancy which failed to stem the increasing prevalence



- Du Toit et al 2008 had noted that prevalence of peanut allergy in Jewish children in London (avoiding peanut in first year) was 10 times higher than Jewish children in Israel (1.85% Vs 0.17%. Fed peanut products early, frequently and large amount)
- Instituted a trial to test this (Learning Early About Peanut allergy - the LEAP study)



LEAP study

- 640 children, 4-11 month age at high risk of allergy (severe eczema, egg allergy or both)
- Two groups;
 - Non sensitised to peanut (SPT = 0)
 - Sensitised to peanut (SPT 1-4mm) negative challenge
 - (SPT >4 mm were excluded)
- Allocated to receiving peanut products regularly (6 g a week three or more meals until 60 months) or avoidance



LEAP study results

- At 5 years age challenged with peanut
 - **prevalence of peanut allergy;**
- All children in study;
 - Avoidance group – 17.2%
 - Consumption group – 3.2%
- Non sensitised group; 530
 - Avoidance group – 13.7%
 - Consumption group – 1.9% (Primary prevention)
- Mildly sensitised group; 98
 - Avoidance group – 35.3%
 - Consumption group – 10.6% (Secondary Prevention)



Conclusion

- Early introduction of peanut helps with primary and secondary prevention of peanut allergy
- New protocols will need to be introduced



What this does not tell us

- What is the minimum dosage and intervals needed
- What is the minimum duration of dosing needed
- Will the effect wear off if dosing is stopped?
- Is this valid for other allergens eg egg?
- Is this valid for other nuts?
- Is this valid for later introduction of peanut?



Breaking News!

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- Is this valid for later introduction of peanut?



LEAP follow up

- >500 children
- 1 year avoidance after trial (consumer group)
- No significant increase in peanut allergy in consumer group
- Peanut Allergy 72 months –
 - 18.6% (52 of 280) avoidance group
 - 4.8% (13 of 270) consumption group



Summary

- Early introduction of peanuts is beneficial
- The benefit lasts if subsequently avoided
- Still many unknowns to sort out



Early introduction of allergens

EAT study

- 1303 - 3 month old breast fed babies
- Either intro of 6 allergenic foods
 - (MEWSFP) 2g 2 x week
- Or wait to 6 months to wean
- Primary outcome – allergy to any of the foods at 1-3 years age



EAT results

1. Intention to treat analysis;

1. No improvement in any group (7.1% vs 5.6%, $P=0.32$)

2. Per protocol analysis;

1. Any allergy lower in early introduction group (2.4% v 7.3%, $p = 0.01$)
2. Peanut allergy lower in early introduction group – (0% v 2.5%, $p = 0.003$)
3. Egg allergy lower in early introduction group – (1.4% v 5.5%, $p = 0.009$)
4. Others no significant difference



EAT results

- Early introduction difficult to achieve but safe
- Dose response to peanut and egg



How has this changed my practice?

- I do not tell mothers to avoid peanuts in infancy
- I encourage children with one nut allergy to eat the others (after SPTs, ward challenges if previously avoided)
- Primary school children avoid nuts outside the home

Other Foods- Egg

- 147 Japanese infant with Eczema. Assigned daily heated egg powder or placebo (Natsume O, prevention of egg allergy high risk infant with egg allergy, Lancet 2017)
 - 78% reduction in egg allergy until 12 months
- Meta-analysis comprising 5 trials including 1915 children introducing egg in 4 to 6 months reduce risk of egg allergy RR 0.56, $P = 0.009$. (Timing of allergenic food introduction to infant diet and risk of allergic disease, JAMA 2016)



Other food -Milk

- **Observational study examining 13,000 infants** (Katz Y. Early exposure to cow's protein is protective against IgE mediated cow's milk allergy, JACI 2010)
 - significantly lower cow's milk allergy when cow's milk introduced in 14 days Vs in 3 months
- **Early introduction of cow's milk showed lower incidence IgE mediated cow's milk** (Onizawa Y et al. The association of delayed introduction of cow's milk with IgE mediated cow's milk allergy, JACI 2016)



- Finnish birth cohort included 994 children. Delayed introduction of multiple foods including oat and wheat increased risk of allergic sensitisation (Nwaru et al. Introduction of food during first year and allergic sensitisation in 5 years, Paediatrics 2010)
- Swedish study of 4089 children; eating fish before 1 year reduce allergic disease and sensitisation to food allergy in 4 years (Kull I et al. Fish consumption in first year of life. Allergy 2006)

- Maternal diet exclusion of cow's milk and egg during late pregnancy does not prevent allergic manifestation in genetically predisposed children (Arshad et al. Primary prevention of asthma and allergy, JACI 2005)



- AAP 2002 Recommendation: Solid held to 6 months for dairy products, 1 year for egg, 2 year for peanuts and 3 years for fish
- AAP 2008 clinical report: Lack of convincing evidence for delayed introduction of allergenic food.



BSACI Recommendation

➤ During pregnancy

- Avoiding particular foods such as peanut has not shown prevent allergy
- Omega-3 fatty acid may help to reduce risk of eczema and allergic sensitisation
- No enough evidence to recommend probiotics to prevent food allergy



BSACI Recommendation

- Exclusive breast feeding around 6 months. Breast feeding alone does not prevent allergies but many important benefits
- Non cow's milk based formula (such as soya) or specialist "low allergy" or hypoallergenic formula has not been consistently shown to prevent food allergy and other allergic disease



BSACI Recommendation

- 4-6 months introduce complementary foods including food known to cause food allergies
- Excluding egg and peanut from baby's diet may increase risk of food allergy



- Recent increase in allergy prevalence has shifted focus from treatment to prevention
- Findings from observational studies, randomised controlled trials and meta-analysis suggest early introduction of allergenic food is a potentially effective strategy for combating the rising rates of food allergy.



References

- Preventing peanut allergy through early consumption – Ready for prime time? Gruchalla RS and Sampson HA, NEJM 2015; 372; 9; 875-7
- Randomised trial of peanut consumption in infants at risk for peanut allergy. Du Toit G et al, 2015; NEJM 372; 1-11

References 2

- Effect of Avoidance on Peanut Allergy
- after Early Peanut Consumption. G du Toit et al. NEJM March 4 2016
- Randomized Trial of Introduction of Allergenic Foods in Breast-Fed Infants. M Perkin et al. NEJM March 4 2016



- Can we prevent allergy?
- We can reduce allergy prevalence



Questions



Thank You!

