Paediatric update

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Welcome to our paediatric nutrition column 'Paediatric update'. In each column, Kiran Atwal, Freelance Paediatric Dietitian, will update you on new guidance, tools and current affairs. Here, Kiran takes a look at *'food-induced anaphylaxis & making children's lives safer'*.

Background

Living with food-induced anaphylaxis can be fatal, and the toll can manifest in numerous ways, including sleeping and eating disorders.[1] Unfortunately, there are no curative medicines. To improve patient safety, it's essential to understand how therapeutic interventions can minimise the risk and effects on children living with severe food allergies.

New insights & developments

Drug treatment with Omalizumab, which inhibits Ig-E antibodies, has shown promising outcomes in a double-blind, randomised, placebo-controlled multi-centre study in the US (OUtMATCH trial) and in a similarly designed single-centre study in Denmark.[2,3]

In the OUtMATCH trial, 177 children aged 3-11 years with positive Ig-E peanut allergy diagnosis and at least two others (cashew, milk, egg, walnut, wheat and hazelnut) with dose-limiting symptoms after a single dose of ≤100 mg of peanut protein and ≤300 mg of the other allergens, were included. Those with severe anaphylaxis history (requiring intubation) were excluded. Children were randomly assigned to receive Omalizumab (n=118) or a placebo (n=59) every 2-4 weeks for 4-5 months. A double-blind, placebo-controlled food challenge (DBPCFC) was performed at the end.[2]

Results indicated that 67% of children in the Omalizumab group achieved the primary endpoint (ability to ingest ≥600 mg of peanut protein without severe symptoms), compared to 7% of the placebo group (p<0.001). Safety profiles were similar between groups, although injection-site reactions were more common with Omalizumab. The first 59 trial patients were entered into a 24-week open-labelled extension where treatment was prolonged. Thresholds of reactivity either remained the same or increased, and quality-of-life scores improved, but not meaningfully.[2]

In the Danish study, 20 children aged 6-17 years with any positive Ig-E food allergy diagnosis and cumulative threshold ≤443 mg of food protein were included. Children were randomised to either Omalizumab (n=14) or placebo (n=6). A DBPCFC was repeated at 3 and 6 months, and drug treatment in responders (with evidence of increasing food allergen threshold) continued at the same dose every 2-4 weeks, whereas non-responders received the maximum dose. All drug treatments terminated at 6 months.[3]

Results indicated that after 3 months, all children in the Omalizumab group significantly increased their allergen threshold by at least a factor of 10 (13-44 mg vs. 1143-44000 mg before and after treatment) compared to controls. A significant increase was found in the primary endpoint (ability to tolerate ≥ 2-step increase in the last tolerated dose) in the Omalizumab group compared to controls. At 6 months, only 1 child in the Omalizumab group developed an allergic reaction, whereas 10 children tolerated 4443 mg food protein (2 of which accepted an open challenge and did not react). All controls reacted to the DBPCFC protocol. Those with asthma and atopic dermatitis had stable symptoms throughout.[3]

How does this add to knowledge & impact current practice?

Omalizumab demonstrates a potential method of prevention as the threshold of reactivity to a food allergen can be raised, improving patient safety. These outcomes are clinically meaningful as they represent (at the least) the difference between not being able to being able to consume foods with 'may contain' labels without reaction.

These studies highlight that less is known about what happens after Omalizumab stops, as there was limited follow-up. Caution has previously been raised around the risk of arterial thrombotic reactions, though this was not identified in either study reported.[4]

Omalizumab was approved by the US Food and Drug Administration in February for Ig-E food allergy in adults and children >1 year. However, in the UK, it's only approved for severe, persistent asthma and chronic spontaneous urticaria in adults and children >12 years. Omalizumab is expensive and studies examining cost-effectiveness in preventing food-induced anaphylaxis are required.

Omalizumab is a subcutaneous injection, which could be associated with some distress in children. Whether this outweighs potential benefits, such as improving quality of life and risk of psychological disorders in those living with food-induced anaphylaxis needs to be explored.

References: **1.** Nemet S, *et al.* (2023). Food-induced anaphylaxis during infancy is associated with later sleeping and eating disorders. Pediatr Allergy Immunol.; 34(12): e14061. **2.** Wood RA, *et al.* (2024). Omalizumab for the Treatment of Multiple Food Allergies. N Engl J Med.; 390(10): 889-899. **3.** Mortz CG, *et al.* (2024). A randomized, double-blind placebo-controlled study on the efficacy of Omalizumab on food allergy threshold in children with severe food allergy. Allergy.; doi: 10.1111/all.16046. **4.** GOV.UK (2014). Drug safety update: omalizumab risk of arterial thrombosis. Accessed online: www.gov.uk/drug-safety-update/omalizumab-potential-risk-of-arterial-thrombotic-events (Mar 2024).