Who is at risk for severe reactions during oral food challenges?

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Background: Oral food challenges (OFC) are the gold standard for the diagnosis of food allergy in children. Using a standardized approach with semi-log dose increments every 30 minutes OFC usually represent a safe procedure without requiring intensive care. Here we describe three cases of severe anaphylactic reaction during OFC in order to identify potential risk factors in children.

Report: Among the last 1,500 DBPCFC performed in our clinic we had three cases of severe anaphylactic reactions requiring ICU transferral. Surprisingly the reactions in our cases were not caused by peanut but by cow’s milk (CM), hen’s egg (HE) and hazelnut (HN). Three male patients (9, 12 and 16 years of age) each with a medical history of atopic eczema and bronchial asthma showed severe anaphylactic reactions with pulmonary obstruction and recurrent drop in blood pressure requiring two or more intramuscular adrenaline injections, administration of volume boluses, inhalation of salbutamol and oxygen, and in two cases application of continuous intravenous adrenaline. All patients started to react at higher titration steps: The eliciting doses were 0.34 g of CM, 0.20 g of hazelnut and 1.55 g of HE protein, respectively.

Clinical Relevance of Report: Severe anaphylactic reactions requiring intensive care during oral food challenges are rare and seem to occur most often in older children suffering from bronchial asthma. We postulate the following assumptions:
- Severe reactions are not limited to the well-known potentially life-threatening peanut allergen but may also occur with CM, HE and hazelnut. Especially older children around school age who did not outgrow their CM or HE allergy may be at a higher risk for anaphylaxis.
- Next to respiratory problems, arterial hypotension seems to play an important role in children and adolescents, which indicates that the administration of intravenous volume boluses in combination with intramuscular adrenaline is a part of severe anaphylaxis treatment that should not be underestimated.
- Since severe reactions are not foreseeable, OFC should be performed under medical surveillance in a controlled clinical setting with access to an intensive care unit.

Statement of Consent for Presentation and Publication: Written informed consent to use the data was obtained for all patients.