Is it allergy?

The allergic child – Early Recognition and Diagnosis

ALLERGY IS COMMON AND INCREASING

Allergy has emerged as a major public health problem in developed countries during the 20th Century. Recent increases in allergic rhinitis, asthma, atopic eczema and now food allergy over the last 25 years have been described as an “epidemic”. Australia and New Zealand have some of the highest prevalence of allergies in the developed world. Of children aged 6-7 years, 1 in 6 have eczema, 1 in 10 have allergic rhinitis or asthma, and approximately 1 in 50 infants are estimated to have food allergy.

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ALLERGIES ARE DEBILITATING

Asthma, hay fever and "allergy" comprise 3 of the top 6 most common long-term self-reported illnesses in Australia. Those affected usually suffer from more than one problem, and need multiple medications for symptom control. Chronic allergies result in impaired quality of life, poor sleep, irritability, impaired learning and impact on behaviour in young children. Childhood food allergies can also cause significant anxiety in parents and their teachers.

Chronic allergies can result in impaired quality of life, poor sleep patterns, irritability, and impact on learning and behaviour in young children

THE RISK OF ALLERGY CAN BE REDUCED

Avoidance of smoking during pregnancy, avoidance of ambient smoke in the environment where children live and play, exclusive breast-feeding until the age of around six months and delayed introduction of solids beyond the age of 4-6 months may partially reduce the risk of development of allergic disease. When exclusive breast-feeding is not possible, a partially hydrolysed cows milk formula like NAN HA may also reduce the risk, as long as the child is not already allergic to cows milk. There is no advantage in using soy formula over cows milk formula to reduce allergies.
EARLY DIAGNOSIS IS IMPORTANT
Early recognition and diagnosis of childhood allergy offers the opportunity to improve quality of life by educating parents, undertake environmental changes, use medication where appropriate and perhaps alter the natural history by using immunotherapy. Since many allergies co-exist, it is important to consider symptoms of related disorders.

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THE ALLERGIC MARCH
While allergies can arise at any age, signs can even appear in the first few months of life. Children with allergic diseases develop IgE antibodies towards common allergens. During infancy cows milk, hens eggs, peanuts and tree nuts are the most common allergens, with eczema and food allergy being the major manifestations. Later in childhood, inhalant allergens such as house dust mites, pollen, mould spores and pet allergens become more important, and allergic rhinitis and allergic asthma may appear. This progression of disease over time is often called the “allergic march”.

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ECZEMA
One of the earliest signs of allergies is eczema, affecting around 1 in 5 infants. Dry scaly skin, scratch marks, weeping vesicles and sores can not only disturb sleep, but may also result in long term changes in skin pigmentation and thickening. A number of factors can make the symptoms of eczema worse – the warmth of bed clothes at night, winter heating, the use of soaps, swimming in chlorinated water, wearing wool or synthetics next to the skin, playing in sandpits, infection and dietary factors. Sometimes there is no obvious reason at all.

Practice Tips
• Emphasise importance of skin care, the daily application of moisturiser and anti-inflammatory creams. Avoid nut oil-containing moisturisers, as there is some evidence that these may increase the risk of sensitisation to that food.
• Identify avoidable triggers
• Consider food allergy with severe early onset eczema, including breast fed babies, particularly if eczema or irritability worsens after feeds when mother has consumed common allergenic foods
• Avoid over diagnosis of food allergies and discourage unnecessary dietary restrictions without evidence
• Provide written treatment plan for routine care and what to do during exacerbations
• Consider infected eczema with very red and angry rashes with weeping sores
• Use antibacterial bath oils on a regular basis in those with frequent infective exacerbations
• Educate parents regarding skin care, allergies in general and how to reduce future risks

When to refer to a Specialist
• Difficult to control eczema
• Suspected food allergy

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**ASTHMA**

Recurrent wheezing is common, affecting around 1 in 3 infants aged 3 years or less, and 1 in 10 children aged 6-7 years. In infancy, the major triggers are respiratory infection and exposure to environmental tobacco smoke. Allergy becomes a more important contributor as children age. Children with other evidence of allergy (eg. eczema, allergic rhinitis or food allergy), those sensitised to inhalant allergens and those with more regular symptoms (between respiratory infections), are more likely to have persistent symptoms into adult life. By contrast, those without evidence of allergy or frequent symptoms between respiratory infections, have a better prognosis, with around 3 in 4 children growing out of their symptoms by teenage years.

*Children with other allergies, those sensitised to inhalant allergen and those with more regular symptoms are more likely to have persistent asthma into adult life.*

Suspicion of asthma is usually raised by the presence of symptoms such as cough, wheeze or tightness in the chest, particularly if aggravated by exposure to cold air, exercise, laughing or crying, or when worse at night. Examination of the chest at the time may reveal “wheezes”, but not always, particularly in children with intermittent asthma. Cough may be the only manifestation of asthma in children, a symptom that can also be triggered by infection or postnasal drip from allergic rhinitis or sinusitis. Accurate lung function testing is not possible in young children, so sometimes a response to medication helps confirm the diagnosis.

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“United airway disease” is a concept linking the inflammation that occurs in the upper and lower airways in patients with allergic disease. Around 8 in 10 patients with asthma suffer from rhinitis, and around 1 in 4 with rhinitis have asthma. In some, asthma may be the dominant presenting complaint, whereas in others, asthma may be silent or subclinical, sometimes manifesting as complaints of “unfitness” or exercise-related complaints. There is accumulating evidence that treatment of rhinitis may improve asthma control and reduce exacerbations.

**Practice Tips**

- Identify exacerbating factors
- Assess the frequency and severity of symptoms
- Look for co morbidity such as allergic rhinitis and eczema and consider treatment
- Identify allergic triggers (such as dust mite and pets) in patients with persistent symptoms and reduce exposure where possible
- Educate parents on exacerbating factors such as indoor tobacco smoke, unflued gas heaters and allergic triggers and taking steps to minimise exposure
- Educate parents on the nature of asthma and options for symptoms control including avoidance, medication or immunotherapy
- Provide written treatment plan for routine care and what to do during exacerbations
- Consider specific immunotherapy in patients where allergy is an important contributor
- Measure lung function regularly (where possible)

**When to refer to a Specialist**

- Difficult to control asthma
- Significant allergic co morbidity
ALLERGIC RHINITIS AND CONJUNCTIVITIS

Allergic rhinitis and conjunctivitis rarely occur in infants, but affect around 1 in 6 children aged 6-7 years, 1 in 10 children aged 13-14 years and around 1 in 5 adults. Symptoms generally persist for at least 10 years, often longer. Typical complaints are those of a blocked and runny nose with clear mucus, itchy nose, sneezing and cough from post nasal drip, a symptom that can be mistaken for asthma cough. Allergic rhinitis may masquerade as continuous or recurrent respiratory infection, frequent sore throats and may be complicated by sinusitis or otitis media. Those with allergic rhinitis suffer more frequent and prolonged sinus infection, so treatment of the allergic component may reduce the risk. Allergic conjunctivitis is usually accompanied by rhinitis, with red and itchy eyes sometimes complicated by infective conjunctivitis due to frequent rubbing.

Seasonal symptoms are most commonly triggered by pollen exposure, with perennial rhinitis aggravated by exposure to house dust mite, mould spores or indoor pets. Lethargy, poor concentration and behavioural changes may arise as a result of persistent symptoms and poor quality sleep, and impact on learning in young children. Since asthma and allergic rhino-conjunctivitis frequently coexist, a search for asthma symptoms should always be made, and treated if present. Asthma and allergic rhinitis frequently co-exist, and treatment of allergic rhinitis can improve asthma control.

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Practice Tips

- Determine whether symptoms are intermittent or persistent
- Assess severity and impact on quality of life
- Identify avoidable triggers with allergy testing
- Look for other co-morbidities such as eczema, food allergy or asthma and treat if indicated
- Educate parents on the nature of allergic rhinoconjunctivitis and options for symptoms control including avoidance, medication or immunotherapy
- Avoid over diagnosis of food allergies and discourage unnecessary dietary restrictions, (which are almost always ineffective) for controlling rhinitis
- Antihistamines and nasal corticosteroid sprays are the mainstay of therapy for controlling rhinitis when allergen avoidance is ineffective or impossible.
- Consider specific immunotherapy in patients with significant symptoms
- Immunotherapy is the only treatment with the potential to alter the natural history of disease, reduces the risk of development of new sensitisations, and the risks of later asthma in those with isolated upper airway disease.

When to refer to a Specialist

- When the diagnosis is in doubt
- When allergic triggers cannot be identified
- When symptoms are severe, difficult to control with standard therapy or there is significant co-morbidity
- For identification of allergic triggers
- When immunotherapy is contemplated

Allergy testing can help identify triggers, facilitate allergen avoidance and help alter the natural history of disease with specific immunotherapy.
URTICARIA AND ANGIOEDEMA

Urticaria (hives) is estimated to occur in between 1 in 5 and 1 in 10 people some time during life. Episodes are more common in young children than in adults. Infection is one of the most common triggers for symptoms, particularly in young children. Unfortunately, hives look the same, regardless of the cause. Since antibiotics are often used to treat infection, drug allergy is often erroneously blamed. A cause is rarely found for chronic symptoms. Some cases are recurrent. In the vast majority, it is associated with distressing symptoms but fortunately only rarely with underlying disease or dangerous upper airway swelling. Persistent daily urticaria is rarely allergic, although some antibiotic-induced reactions may persist for several days or weeks.

Infection is the most common trigger for urticaria in young children.

Suspicion of an allergic trigger should be raised with relatively rare and short-lived severe episodes of hives, particularly when accompanied by difficulty breathing or gastrointestinal upset, or soon after commonly allergenic foods in young children such as cows milk, hens eggs, peanuts, tree nuts or soon after a bee, wasp or jack jumper ant sting. Angioedema is a related condition, where swelling occurs in the deeper layers of the skin. These swellings may be larger and last longer than simple hives. Facial swelling may be frightening and induce fear that severe tongue or throat swelling may follow. Fortunately this is very rare when the cause is not allergic.

An allergic cause should be suspected with short-lived severe episodes of hives, particularly when accompanied by difficulty dyspnoea or gastrointestinal upset, or soon after consumption of allergenic foods.

When allergy is suspected, parents should document the circumstances of any stings, medications (including herbal remedies) or food ingested within the previous few hours, whether the child is known to be allergic to any of these, and whether they are known to be able to eat common food allergens (eg. peanuts) or have simply not been exposed. Specific allergy testing should then be undertaken to help confirm or exclude an allergic cause. Medically supervised challenge may sometimes be required. If allergy is eliminated, non-sedating antihistamines are the mainstay of treatment. Most episodes settle after several weeks.

Practice Tips

- Urticaria is common, particularly in young children
- Infection and food allergy are the most common triggers in young children
- Allergy should be suspected with severe and short-lived episodes, particularly if accompanied by difficulty breathing or gastrointestinal upset, and after exposure to common allergens.
- With the exception of antibiotic allergy, urticaria lasting more than 24 hours rarely has an allergic cause
- Non-sedating antihistamines are the mainstay of treatment
- Routine blood allergy tests and measurements of total IgE are rarely contributory

When to refer to a Specialist

- Severe and difficult to control symptoms, or when an underlying disease process is suspected
- When an allergic trigger is suspected
- In the case of recurrent angioedema to exclude rare causes such as hereditary angioedema
FOOD ALLERGY AND ANAPHYLAXIS

Food allergy is estimated to affect 2-3% of infants. Recent studies from the UK and USA suggest that peanut allergy has doubled in the last 5 years. Admissions to hospital with anaphylaxis have also doubled in the last decade in both Australia and the UK, particularly in young children. The most common triggers in children are cows milk, hens eggs, peanuts, tree nuts and sesame seeds in young children. While the majority of those allergic to cows milk, egg, wheat or soy outgrow their allergies by school aged, those allergic to peanuts, tree nuts, seeds or seafood usually have persistent allergy. The most common symptoms in infants are urticaria and/or vomiting within 2 hours of ingestion.

The most common food allergens in children are cows milk, hens eggs, peanuts, tree nuts and sesame seeds.

Management involves identification of avoidable triggers, nutritional advice, re-evaluation from time to time to determine whether the allergy has resolved, risk assessment and provision of an emergency action plan. Avoidance strategies can be disruptive to families and social interactions and have an impact on quality of life comparable with a diagnosis of diabetes or malignancy in children. It is important to note that when interpreting the results of allergy testing, the size of the skin test reaction (or magnitude of the blood test response) correlates with the likelihood of having allergy to that food, but not the severity of the reaction. Desensitisation to “switch off” food allergy is an active area of research, but is not yet a component of routine clinical practice.

When interpreting the results of allergy testing the magnitude of the skin test reaction or blood test response correlates with the likelihood of having food allergy, but not its severity.

Anaphylaxis is a more serious allergic reaction, resulting from massive release of inflammatory mediators, resulting in one or more of difficulty breathing or vascular collapse. The most common triggers are food in infants, with drug, latex and stinging insect allergy being relatively uncommon. Poorly controlled asthma is the main risk factor for fatal childhood anaphylaxis. Anaphylaxis should be considered as a differential for any acute onset respiratory distress, bronchospasm, hypotension or cardiac arrest, even when skin signs are absent.

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In anaphylaxis death may occur from hypoxaemia due to upper airway angioedema, bronchospasm and mucus plugging, and/or shock due to massive vasodilation, fluid shift into the extravascular space and depressed cardiac function. The cornerstones of initial management are the supine position, intramuscular adrenaline into the lateral thigh (EpiPen Junior 0.15mg < 20kg; EpiPen 0.30 mg > 20 kg), intravenous fluids, support of the airway and ventilation, and supplementary oxygen. Poorly controlled asthma appears to be the main risk factor for death due to food allergy.

The cornerstones of acute anaphylaxis management are the supine position, intramuscular adrenaline into the lateral thigh, intravenous fluids, support of the airway and ventilation, and supplementary oxygen.

Specialist evaluation is recommended after a diagnosis of possible anaphylaxis, to identify or confirm the cause, to educate regarding appropriate avoidance strategies, to assist drafting an emergency action plan and to advise whether immunotherapy (eg. for venom allergy) is appropriate. Psychological morbidity and negative impact on quality of life is common in patients and their care-givers, and some require emotional support and counselling as well as medical advice.
Practice Tips

- The most common food allergens in children are cows milk, hens eggs, peanuts, tree nuts and sesame seeds in young children.
- Ensuring nutrition is an essential component of management in the babies allergic to formula, or in mothers who restrict their own diet when feeding an allergic child with food allergy. Involvement of a dietitian may be required.
- When ordering allergy testing, test for the most common allergenic triggers.
- Measurement of total IgE and in vitro testing using food mixes frequently provides misleading or irrelevant results and should not be requested.
- Skin prick testing to assess sensitisation to allergenic triggers should only be carried out in an environment where anaphylaxis can be treated.
- When interpreting the results of allergy testing the magnitude of the skin test reaction or blood test response correlates with the likelihood of having allergy to that food, but not whether it will be serious.
- Counsel patients and their caregivers that severe reactions such as severe hives or facial swelling or vomiting do not equate to serious/dangerous reactions.
- Risk assessment involves evaluating the presence of absence of serious allergic symptoms in the past (respiratory distress or vascular collapse) and provision of an emergency action plan.
- Consult an allergy specialist by telephone initially as to whether the patient needs an EpiPen pending formal review.
- Review the patient from time to time, to assess nutrition, determine whether the allergy may have resolved, and provide counselling and emotional support.

When to refer to a Specialist

- All cases of suspected anaphylaxis
- Milder cases of suspected food allergy where the cause cannot be identified with certainty
- Due to difficulties interpreting the results of allergy testing in children less than 2 years, testing is best performed by allergy specialists.

OTHER FOOD RELATED SYNDROMES

Oral allergy syndrome

Some patients with seasonal allergic rhinitis or conjunctivitis will develop itch and irritation of the tongue, mouth and throat after ingestion of some fresh fruits and vegetables, known as Oral Allergy Syndrome. The majority of patients are allergic to cross-reactive proteins common to some pollen and foods. These proteins are normally destroyed by cooking, so that the same food when cooked, is often tolerated. While it is generally a benign disorder, angioedema or even anaphylaxis may occasionally occur, particularly if ingestion of a large amount of food allergen is followed by vigorous exercise. The mainstay of therapy is avoiding the food or cooking it well. Patients who are unable to tolerate fruit or vegetables in an uncooked form are forced to rely on well-cooked food in conjunction with vitamin supplements. Such patients usually require advice from a specialist dietitian.
**Eosinophilic oesophagitis**

Eosinophilic oesophagitis is an inflammatory condition of uncertain cause, occurring most commonly in patients with atopic disease and whose incidence appears to be increasing. In children, this condition tends to present as severe oesophageal reflux unresponsive to conventional medications, and adults can have a similar presentation, often accompanied by choking episodes and dysphagia of solid foods or even food impaction. In recent reported studies, some groups claimed that a combination of skin prick testing and food patch testing with staple foods, will identify potential food allergens which if avoided, will result in a clinical improvement. This condition appears to not resolve. This is a complex medical condition requiring the advice of gastroenterologist, allergy specialists and dietitians. If suspected, referral to a gastroenterologist is recommended in the first instance to confirm the diagnosis, then an allergy specialist if confirmed. Therapy involved the use of one or more of diet manipulation, anti-reflux medication, the used of “swallowed” asthma corticosteroids, Singulair (montelukast) and sometimes dilatation of the constricted oesophagus.

**Delayed reactions to food**

Not all food reactions in infants result in immediate hypersensitivity (eg. acute urticaria, vomiting or bronchospasm). Occasional children, however, do NOT have reactions that occur quickly. Instead, delayed immune reactions start after several hours or days, most commonly in response to dairy products, soy or wheat. Patients generally present with one or more of severe atopic dermatitis/eczema, chronic diarrhoea (sometimes accompanied by blood), failure to thrive, or severe reflux of food or formula. Symptoms occur due to inflammation of the skin or gut, and results from attraction of white cells from the blood into the tissues. Routine allergy testing is often negative, making diagnosis more difficult. Diagnosis usually rests on the history of possible reactions to food, and responses to food withdrawal and re-challenge. Most of these delayed reactions resolve by the age of 3 years. At times, even small amounts of food allergen passing through breast milk can aggravate eczema or gut symptoms. Allergy testing of the infant may or may not be positive, depending on the mechanism of the sensitivity (immediate vs delayed). If one of these conditions is suspected, specialist advice should be sought.

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**Disclaimer**

The content of this article has been reviewed by ASCIA members, represents the available published literature at the time of review and is not intended to replace professional medical advice. Any questions regarding a medical diagnosis or treatment should be directed to a medical practitioner.

For further information on allergy, asthma or immune diseases, visit www.allergy.org.au - the web site of ASCIA.

ASCIA is the peak professional body of Clinical Immunologists and Allergists in Australia and New Zealand.

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