



Investigating the child with urticaria

Each month we present authoritative advice on the investigation of a common clinical problem, specially written for family doctors by the Board of Continuing Medical Education of the Royal Australasian College of Physicians.

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Urticaria is common in children: 15 to 20% have at least one episode by adolescence. It is a result of transient extravasation of plasma into the dermis, which causes changes in the skin. Involvement in the upper dermis results in wheal formation, and localised vasodilatation produces redness.

Angio-oedema results from changes in the subcutaneous areas and is seen particularly around the face and lips, although it can occur anywhere in the body. Individual wheals are transient, have an abrupt onset, and persist for no more than a few hours.

Differential diagnosis

The differential diagnosis of urticaria is important and may warrant investigation. Conditions such as vasculitis, juvenile rheumatoid arthritis and mastocytosis can present with skin appearances somewhat similar. Vasculitic lesions usually have purple centres that are nonblanching. Giant urticaria is often confused with erythema multiforme in which there are target lesions that often have a central necrosis and can be associ-

ated with mucocutaneous lesions.

Any atypical urticarial appearance, such as with persistent purpura suggesting a vasculitis, warrants referral to a dermatologist.

Urticaria has a distinctly different appearance to the petechiae and purpuric lesions associated with meningococcal disease. In meningococcal disease, the children are much sicker and the rash evolves quickly – of course, these children must be treated urgently with antibiotics.

Cellulitis can sometimes be mistaken for angio-oedema and urticaria, but the clinical features of warmth and tenderness with cellulitis should help differentiate the cause. Periorbital cellulitis with oedema of the eyelids and surrounding tissues (usually from a *Haemophilus influenzae* infection) has sometimes been mistaken for allergy, but it is fortunately on the decline since the introduction of the Hib vaccine.

Investigating urticaria

Urticaria can be categorised into several types, depending on the clinical features, duration of onset and chronicity. This is helpful in determin-

IN SUMMARY

- Allergy testing with skin prick testing or radioallergosorbent testing (RAST) is helpful only if there is strong suspicion of immediate urticaria.
- Urticaria can have varying appearances, including wheals and erythema with circles or polycyclic borders on the trunk, limbs or face.
- Persistent purple discolouration or purpuric centres may be a vasculitis.
- The physical urticarias (triggered by changes with pressure, heat, water, cold, sunlight or exercise) are non-IgE mediated.
- The commonest form of childhood urticaria is acute, self-limiting and non-IgE mediated and is usually due to viral infections with or without drug intake.
- Urticaria associated with atopic dermatitis and angio-oedema of the lips may be due to foods.

Table 1. Urticaria in children

Type	Clinical features	Immunology	Causes	Investigations	Treatment
Immediate	Hives around face with or without angio-oedema	May be IgE mediated	Foods, stings, drugs	Skin prick testing, RAST, food challenge	Avoidance
Papular	Clusters of itchy papules	Hypersensitivity	Reaction to insect bite	Nil	Avoidance, anti-insect measures (e.g. repellents)
Acute	Large erythematous annular and polycyclic lesions on trunk, limbs and face	Usually not IgE mediated	Viruses (with or without drugs), food, physical factors	Nil	Long acting non-sedating antihistamine
Chronic (>6 weeks)	Persisting or recurring lesions	Not IgE mediated	Unknown, chemicals in foods, rarely autoimmune diseases	Full blood examination, erythrocyte sedimentation rate, antithyroid antibodies	Elimination diet, long acting non-sedating antihistamine or sedating antihistamine

ing whether specific investigations are necessary (Table 1).

Immediate urticaria

Immediate urticaria occurs within minutes to hours of exposure to a trigger, which may be foods, insect stings or drugs. It generally presents with urticarial hives around the face, often with angio-oedema. The urticaria is often IgE mediated in the case of foods such as peanuts, eggs or cow's milk (Table 2), but other foods such as strawberries or tomatoes may produce urticaria that is non-IgE mediated.

Insect bites are usually obvious, and most times the cause is suspected on the history and association, but investigations to confirm the clinical suspicion can be extremely helpful in IgE mediated urticaria.

Skin prick testing is the method of choice and should be done in an appropriate setting with standardised extracts of foods; it should include a positive and negative control so that the results can be interpreted appropriately.

Also of help is RAST (radioallergosorbent

testing) on a sample of blood – in which specific antibodies to various foods can be tested. However, RAST is often not as specific as skin prick testing. Because of medical benefits refund limitations, only four individual foods or items can be processed by the RAST method, as opposed to many more on the skin with skin prick testing. Skin prick testing also has the advantage of being cheaper and having an immediate result that can be witnessed by the parents. There is no age barrier to skin prick testing, but RAST is sometimes preferred in a situation where there is a significant skin disorder such as generalised eczema.

In the case of suspected foods (e.g. egg or peanut), a cautious, controlled food challenge may also be important to identify the cause. This should be done in a setting such as an allergy centre with experienced staff who are able to handle any problems such as anaphylaxis.

Papular urticaria

A distinctive type of urticaria common in children is papular urticaria, which involves clusters of

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Table 2. Causes of immediate urticaria

Foods

- Peanuts
- Eggs
- Cow's milk
- Shellfish
- Strawberries
- Tomatoes

Drugs

- Penicillin
- Amoxicillin
- Cephalosporins
- Salicylates

Bites and stings

- Bees
- Spiders
- Jumper ants
- Wasps
- Jellyfish



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Figures 1a and b. Two children with severe urticarial reactions due to viral infection.

itchy papules on exposed areas. This represents a hypersensitivity to an insect bite, particularly mites and fleas from cats or dogs. These grouped lesions with central puncta often last for 10 to 14 days, and no investigations are required.

Acute urticaria

This form of urticaria is the most common and is usually not IgE mediated.¹ It is characterised by large erythematous, annular and polycyclic lesions on the

trunk, limbs and face (Figures 1a and b). The wheals commonly last from 20 minutes to three hours and then can reappear on other parts of the body. The urticaria will often last one to two days and rarely up to three to six weeks.

In about 50% of children with acute urticaria, the urticaria is commonly associated with angio-oedema. It appears as large swellings with indistinct borders around the eyelids and lips, but may appear on the face, trunk, genitalia and

extremities. The face, hands and feet are the most common sites for angio-oedema.

Acute urticaria is most commonly caused by viral infections, either alone or in combination with drug intake.² The viruses commonly implicated have been adenovirus, Epstein–Barr virus, enterovirus and respiratory syncytial virus. Specific investigations, particularly skin prick testing or RAST, are not helpful. Foods can be responsible for acute urticaria; however, they are usually associated with atopic dermatitis and commonly involve angio-oedema of the lips.

Treatment with an antihistamine, in particular a long acting, nonsedating one (e.g. loratadine [Claratyne]), is worthwhile. If itching and restlessness at night is a problem, one of the sedating antihistamines (e.g. trimeprazine tartrate [Vallergan]) should be considered.

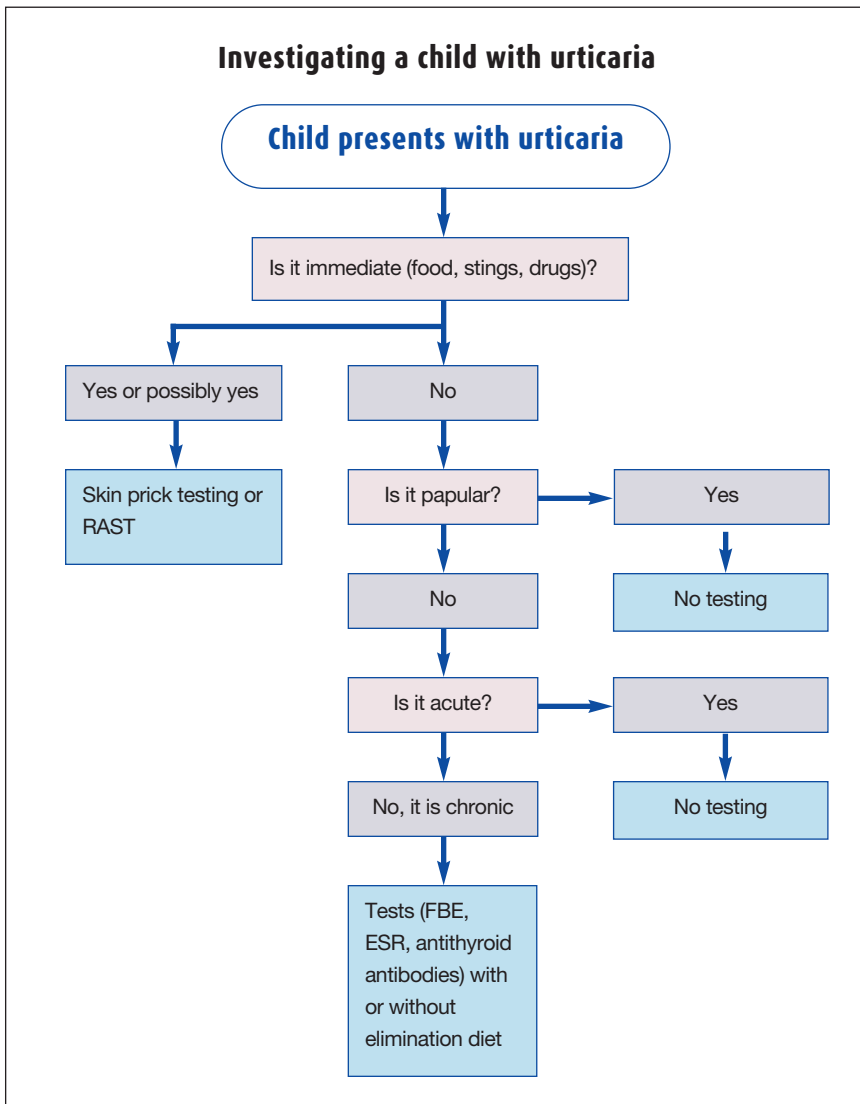
Physical urticaria

Physical urticarias are a specific form of urticaria triggered off by physical factors such as heat, exercise and cold. Dermographism is a form of physical urticaria in which light stroking of the skin can produce a wheal and flare reaction.

Chronic urticaria

Recurring or persisting urticaria lasting for more than six weeks is classified as chronic urticaria. Initially, this can be indistinguishable from the acute urticaria, and it too is non-IgE mediated.¹ Investigations are largely unrewarding in this group, but rare causes of chronic urticaria are associated with collagen vascular disease, inflammatory bowel disease and thyroid disease. Therefore, investigations such as full blood examination, erythrocyte sedimentation rate and antithyroid antibodies are warranted for chronic urticaria.

Chronic urticaria can be caused by reactions to chemicals and foods, and an elimination diet with removal of colouring agents and preservatives is worthwhile because these can play a



more important role in urticaria in children compared with that in adults.³

Summary

A careful history, examination and consideration of specific tests, particularly in children with immediate urticaria, may assist in the identification of the cause. However, this will be in the minority of cases. Most cases of urticaria, especially acute urticaria and chronic urticaria, are of unknown cause or, in cases of acute urticaria, are mainly due to benign viral infections or drugs.

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References

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