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PROCEDURE

The occasional allergy skin test

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INTRODUCTION

Sensitisation to foreign proteins affects 40% of humans, with the majority suffering symptoms of allergic rhinitis.[1] While presumptive treatment with antihistamines or steroids often helps, it is not clear, at times, what is causing the symptoms. Allergists are in short supply, often in distant cities, and waiting lists are long, so patients might appreciate some development of local testing capability. Allergy testing helps rural doctors and their patients to determine if the symptoms are allergic reactions, to identify the specific allergens, and to pick appropriate therapy.

Since 1880, physicians have been using percutaneous scratch testing (PCT) to test for immediate type hypersensitivity (IgE).[2,3] Scratch tests are very safe, with rare systemic reaction (3:10,000 patients)[4] and no deaths reported in the US over 5 years.[5] Scratch testing for airborne allergies has a specificity of 70%–95% and a sensitivity of 80%–97%.[6]

EQUIPMENT LIST

- Allergen Reagents
- Reagent wells
- Prick device
- Ruler
- Syringes and needles
- Adrenalin 1:1000 intravenous (IV)
- Diphenhydramine PO and IV.

While all laboratories will provide any of a number of PCT serums for testing, inhalant allergens are particularly reliable.[6] Standardised reagents are preferred when available, and have a concentration indicated in bioequivalent allergy units, for example, House Dust Mite (100,000 BAU/mL). Non-standard reagents are identified by simple weight-volume concentration, for example, Cat Dander (1:20 w/v).

The allergens that I test for include house dust mite, grasses, trees, feathers, mould, cat, dog, weeds mix, ragweed. I use 50% glycerine as the negative control and 1:1000 histamine for the positive control. Canadian suppliers that I have used include Western Allergy and Quantum Allergy. To my understanding, only a few physicians test for insect venom allergy as the serum is expensive, has a short shelf life, and the management of the condition is relatively high stakes. Food allergy PCT testing can be offered but is fraught with false positives and is harder to interpret as a result.

For the skin pricking device, Allersharp™ plastic needles are available from Western Allergy, and DuoTip 2® plastic needles from Quantum Allergy.

While it is unlikely that you will use them, it is prudent to have emergency equipment and supplies,

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which at a minimum would be adrenaline and diphenhydramine [Figure 1]. If the clinic is remote from a hospital, consider equipment for airway and cardiac support. Do not ask for trouble and defer allergy testing (and even more so allergy shots!) in patients with an inadequately controlled asthma flare.

THE PROCEDURE

Antihistamines, including drugs with antihistamine side effects such as imipramine and phenothiazines, will suppress allergy skin testing and may cause false negatives. While tricyclic antidepressants should be withheld for several weeks before testing, it is sufficient to withhold the others for 10 days. In contrast, inhaled and systemic steroids, beta agonists and montelukast do not affect the testing. The following are two scratch test techniques:

1. I was first taught to do PCT as follows: Apply a drop of reagent to the skin at 2 cm intervals in a line. Drag a 20 gauge hypodermic needle at 45° to scratch along the line through the drops. Maintain a constant pressure and avoid drawing blood (as it causes pain and false positives) for consistent results
2. Currently, I use disposable plastic skin pricking devices. For both the Allersharp and the Duo Sharp 2, dip them into a well of reagent, then lightly dent the skin with them and rotate. They are single use and are disposed of after each skin prick. I feel that the test is less painful, and uses less reagent than scratching with a hypodermic. The individual needles that I use (Allersharp®), matching reagent wells and serum are illustrated in Figure 2.

AFTER PROCEDURE ADVICE

A positive test to a given reagent is noted at 15–20 min post-injection when the largest diameter of the wheal is 3 mm greater than the reaction to the negative control [Figure 3]. If there is no reaction to the positive control, false negatives are possible. A positive test is adequate to make a diagnosis of sensitivity and is combined with the history to make the diagnosis of allergy.

When an allergy is documented, the primary treatment is always some form of environmental measure to reduce exposure. If you are allergic to your cat, unfortunately, you are unlikely to get symptoms under control without getting rid of the pet (allowing a few months to pass to reduce residual allergens left in the home). For house dust mite allergies, the



Figure 1: Emergency supplies.

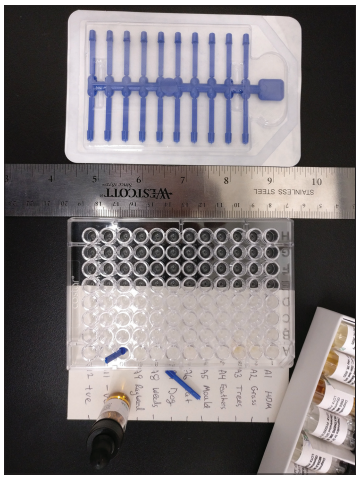


Figure 2: Allergy testing supplies.



Figure 3: Reading the reactions.

mattresses and pillows should be encased in plastic, and bedroom carpet should be removed. All indoor allergens can be abated with monthly changes of a high-efficiency particulate air filter for the central heating/cooling. After environmental control, antihistamines and nasal corticosteroids, for periodic symptoms, are cost-effective and may be all you need.

Immunotherapy can be offered for the specific allergens for which the patient has symptoms. Subcutaneous immunotherapy (SCIT) can be offered with weekly up-titration to a monthly maintenance dose. After 3 months, there will be some symptomatic relief. Therapy can be discontinued after 3 years, with most people having persistent control of symptoms.[7] Children treated with pollen SCIT will have a 50% reduction in onset of new allergies and a 2-fold reduction (24% vs. 44%) in onset of asthma.[8] In 1 of 500 injections of SCIT, there will be a serious reaction, but it is rarely fatal.[7]

More recently, daily sublingual therapy has been shown to be safer (and thus is given at home after a first dose at the clinic) although it is more expensive than SCIT.[7]

CONCLUSION

A rural doctor can safely perform PCT for common inhalant allergens, thus saving their patients travel and delay. It is a simple procedure and has results that the patient can easily see and understand (See Appendix for suppliers).

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APPENDIX

Suppliers in Canada for allergy testing supplies and immunotherapy include.

ALK-AbellÓ Pharmaceuticals Inc.
#35-151 Brunel Road,
Mississauga, Ontario, L4Z 2H6
Tell: 1-800-663-0972
Fax: 1-877-716-8311

Western Allergy
810. Humboldt St,
Victoria, BC V8V 5B1
Tel: 1-866-335-5294
Fax: 1-877-337-1935

Quantum allergy Canada
712. Davis Drive, Suite 204
Newmarket, Ontario, L3Y 8C3
Tel: 1-888-552-2732 (TOLL FREE)
Fax: 1-888-862-8858 (TOLL FREE)