Allergy Testing

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KEYWORDS

• Allergy testing • Skin prick testing • Intradermal testing • In vitro allergy testing • Patch testing • IgE hypersensitivity • Allergen

KEY POINTS

- Allergic diseases are commonly seen in the primary care office setting; indiscriminate battery of allergic testing is not routinely recommended without presence of clinical symptoms.
- Symptomatic patients can undergo allergen specific immunoglobulin E (IgE) testing to help guide allergen avoidance.
- Skin testing can be performed by percutaneous or intradermal route.
- Serum total IgE level measurement is not very helpful, but assays for specific IgE antibodies can be considered in appropriate situations.
- In cases of persistent or chronic allergic rhinitis and allergic asthma, specific allergic testing may be helpful.

INTRODUCTION

Allergic diseases are commonly seen in the primary care setting. More than 50 million Americans suffer from allergic rhinitis. Asthma affects about 20 to 30 million Americans, which in many instances has an allergic component to it.[1] Allergic skin conditions are also prevalent. Primary care physicians need to be comfortable assessing and managing patients with these disorders. Knowledge and appropriate use of allergy testing is an important component of allergic disorder management. Allergy testing can assist in the possible identification of the individual allergen that is involved in the allergic reaction, which in the long run can help to decrease the morbidity and mortality for patients. **Box 1** summarizes the indications of allergy testing. This article focuses on the common tests used in allergy testing.

SKIN PRICK TESTING

The skin prick method is the best initial means for testing individuals who have potential allergies. The procedure involves cleaning the skin with a 70% alcohol solution.

Disclosure Statement: The authors have nothing to disclose.
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Prim Care Clin Office Pract 43 (2016) 363–374
http://dx.doi.org/10.1016/j.pop.2016.04.001 **primarycare.theclinics.com**
0095-4543/16/$ – see front matter

Box 1
Indications for allergy testing

- Perennial or seasonal rhinitis
- Rhinosinusitis
- Rhinoconjunctivitis
- Rhinitis with otitis media
- Suspected food allergy
- Suspected drug allergy
- Suspected insect bite or sting
- Persistent asthma

After that, a concentration of 1 to 10 or 1 to 20 g/L of the allergen is placed on the skin. It is important to ensure that the correct concentration of allergen, as stated in the package insert, is used. It is also important to make sure that each drop has only 1 allergen when attempting to identify an allergy to a specific substance. In certain circumstances, it is acceptable to use multiple allergens (eg, multiple forms of tree pollen).

When performing the test, the drops should be placed at least 2 centimeters apart. Placing the drops closer to each other increases the potential for cross-contamination of the allergens resulting in potential false-positive or false-negative reading of the test. After the drops are placed, a commercial device is used to prick the skin causing the drops of allergen to go underneath the outer layer of the skin. The older method of "scratching" the skin with a needle or other device is rarely used now because it carries a greater risk for systemic reactions, and is more likely to lead to scars or other damage to the skin.[2]

Appropriate controls are important. The test should include both a positive and a negative control to verify that the patient's skin responds appropriately. The positive control is generally a 10 g/L concentration of histamine dichloride. The negative control is generally the identical concentration of glycerinated saline.

A positive test results is a raised wheal on the skin with surrounding erythema. The histamine control normally produces a wheal of at least 3 mm in diameter. If the positive control does not provide a wheal with a 3 mm diameter, it is possible to simply count any wheal 3 mm or greater as a positive.[3] The wheal of a positive test must be of at least the same size or larger than the histamine control.

The measurements for the size occur at 10 minutes for the control, and 15 to 20 minutes for the allergens themselves. A more precise measurement can be done by measuring the fattest and thinnest part of the wheal, and then expressing this as an average.[4] Sometimes, using ink and putting the size of the wheals on a piece of paper is helpful for the purposes of keeping records.

CONTRAINDICATIONS

Overall, allergy skin prick testing is a safe procedure. Rarely, it can cause systemic reactions, such as anaphylaxis. It is important to make sure that individuals are not at a risk for anaphylaxis. Individuals with a high risk for anaphylaxis include those who have uncontrolled asthma and those who have reduced lung function.

Individuals who have experienced anaphylaxis within the previous 30 days are not good candidates for skin prick tests because the tests results may have a