Review: Skin and in vitro tests for allergic rhinitis vary widely in usefulness

Gendo K, Larson EB. **Evidence-based diagnostic strategies for evaluating suspected allergic rhinitis.** Ann Intern Med. 2004;140:278-89.

QUESTION

In patients presenting with nasal symptoms, how do different testing strategies compare for diagnosing allergic rhinitis?

METHODS

Data sources: MEDLINE (January 1995 to March 2003), references of practice guidelines and review articles, and specialists.

Study selection and assessment: Studies that compared skin tests or in vitro tests with a gold standard. Gold standard tests involved 1 of 3 methods: *clinical criteria* (established by ≥ 2 clinicians correlating patients' symptoms and signs); a *composite* (history and examination plus ≥ 1 of skin tests, in vitro tests, and nasal provocation tests); and a *nasal challenge* (nasal passages are exposed to an allergen in increasing concentrations). Non-English language studies, studies on children, and studies that did not report results for patients with and without allergic rhinitis were excluded.

Outcomes: Sensitivity, specificity, and likelihood ratios.

MAIN RESULTS

7 studies met the selection criteria and excluded the index test from the gold standard. The most rigorous gold standard was considered to be the nasal challenge. The studies evaluated puncture and intradermal skin tests, and in vitro tests including the Phadiatop test (a second-generation in vitro test) for cat, tree, grass, mold, mite, and multiallergens. The results are in the Table.

CONCLUSION

Diagnostic tests for allergic rhinitis vary considerably in sensitivity and specificity according to test type and suspected allergens.

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Diagnostic performance of tests for allergic rhinitis that do not include the index test in the gold standard*

Tests	Allergen	Gold standard	Sensitivity	Specificity	+LR	–LR
Puncture	Cat	Challenge	94%	81%	4.9	0.08
		Clinical	57%	84%	3.6	0.51
	Tree	Challenge	97%	94%	16.2	0.03
	Grass	Challenge	97%	70%	3.2	0.04
		Clinical	75%	89%	6.8	0.28
	Mold	Challenge	95%	92%	11.8	0.05
	Mite	Challenge	97%	76%	4.1	0.03
Intradermal	Cat	Challenge	60%	32%	0.9	1.24
		Clinical	81%	67%	2.5	0.28
	Grass	Challenge	33%	68%	1.1	0.98
		Clinical	79%	84%	4.9	0.25
	Mold	Challenge	95%	89%	8.8	0.05
In vitro	Cat	Composite	63%	91%	7.0	0.41
		Challenge	87%	91%	9.4	0.14
		Clinical	61%	82%	3.4	0.48
	Tree	Challenge	82%	100%	—	0.18
	Grass	Composite	80%	99%	80.0	0.20
		Challenge	94%	70%	3.1	0.09
		Clinical	65%	86%	4.6	0.41
	Weed	Composite	61%	97%	20.3	0.40
	Mold	Composite	56%	96%	14.0	0.46
		Challenge	81%	95%	15.0	0.20
	Mite	Composite	19%	97%	6.3	0.84
		Challenge	88%	26%	1.2	0.46
"Phadiatop"†	Multiallergen	Composite	96%	94%	16.0	0.04
		Clinical	77%	81%	4.0	0.28

*Diagnostic terms defined in Glossary.
†Pharmacia-Upjohn, Uppsala, Sweden.

COMMENTARY

The review by Gendo and Larson analyzes the value of allergy testing for the diagnosis and management of allergic rhinitis. The authors conclude that a therapeutic trial of allergy medication, without diagnostic testing, is indicated as a first-line intervention when a high pretest probability exists, in view of the minimal adverse effects for these medications. Diagnostic testing is of value when patients do not respond to medication, permitting specific allergens to be identified so that avoidance measures or specific immunotherapy can be started. Testing may also be valuable when a relatively low pretest probability exists and a positive result would lead to a posttest probability that is high enough to warrant a decision to treat.

There are 3 fundamental principles of managing allergic rhinitis: first, avoid allergic triggers where possible; second, use standard pharmacotherapy to manage symptoms; and third, use specific immunotherapy if the preceding measures do not provide sufficient benefit. The recent classification of allergic rhinitis (1) based on frequency (intermittent or persistent) and severity (mild, moderate, or severe) also serves as a useful guide to therapy. The conclusions of the review are most applicable to pollen-sensitive seasonal allergic rhinitis, where the clinical pattern strongly suggests high pretest probability, the duration of symptoms is limited, and allergen avoidance is difficult. However, in persistent rhinitis, identification of allergic triggers is an important initial part of management, as allergen avoidance or removal may obviate the need for medication. Otherwise, medication, with its attendant costs, may need to be maintained over the long term although it may be efficacious with a low side-effect profile. Similarly, a negative allergy test is important in this context to guide clinical decisions and prevent unnecessary allergen avoidance. Hence, the conclusions and decision-making models are relevant for certain intermittent patterns of allergic rhinitis, but less so for persistent rhinitis, particularly of a moderate-to-severe degree.

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Reference

1. **Bousquet J, Van Cauwenberge P, Khaltaev N.** Allergic rhinitis and its impact on asthma. J Allergy Clin Immunol. 2001;108:S147-334.