The Role of Allergy Testing to Achieve Personalized Treatment Goals for Allergic Rhinitis and Asthma
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CASE

13 y/o boy; longstanding cough, runny nose

Coughs frequently during the night, gets up several times to blow his nose

Mother is concerned

His grades have dropped; he has daytime sleepiness and trouble concentrating

He has to stop basketball practice sometimes because he can’t breathe

Medical history: OTC antihistamine; short-acting beta-agonist
EPIDEMIOLOGY OF ALLERGIC RHINITIS AND ASTHMA

- Allergic rhinitis (AR) affects up to 40% of children and up to 30% of adults in the US
- Asthma affects 1 out of every 12 people in the US
- AR can be associated with significant comorbidity and sinusitis
- Both conditions can negatively impact patients’ quality of life
  - Affecting caregivers
  - Ability to function at school/work
  - Frequent medical visits
- AR costs an estimated $25 billion a year; asthma costs upwards of $80 billion

CONFIRMING A DIAGNOSIS IS CRUCIAL

• AR and asthma are underdiagnosed and undertreated
  – Observational study of 250 patients in a real-life setting
    • 60% had uncontrolled AR
    • 50% used multiple medications
    • A minority were receiving allergen immunotherapy

• Allergy testing can confirm a suspected allergy
  – Skin-prick testing and specific IgE blood testing
  – In combination with past clinical history
  – Exam suspicious for an allergy-based disorder of the upper or lower airways

• Skin-prick testing and specific IgE blood testing are not recommended in symptom-free patients or for testing for drug allergies

ALLERGY TESTING

• Majority of guidelines consider allergen-specific IgE blood tests as being equivalent to skin-prick testing

• Understanding the benefits and limitations of each method will allow the provider to choose the best test option for the patient
  – Measuring allergen-specific IgE is more helpful in a younger child or a child with severe eczema
  – Therapies taken for known allergies may interfere with skin testing
  – Blood testing requires one venipuncture and might be more comfortable and convenient as opposed to multiple skin pricks or a scratch test
# DIFFERENCES BETWEEN SKIN AND BLOOD TESTS

<table>
<thead>
<tr>
<th></th>
<th>Ease of procedure</th>
<th>Accuracy of results</th>
<th>Impact of medications</th>
<th>Risk</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin test</td>
<td>• Several pricks</td>
<td>• Darker skin and presence of skin condition can affect the results</td>
<td>Steroid, antihistamine</td>
<td>Severe allergic reactions/</td>
<td>+</td>
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<tr>
<td></td>
<td>• Results in ~15 min</td>
<td>• Test for finite number of allergens</td>
<td></td>
<td>anaphylaxis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Qualitative results</td>
<td></td>
<td></td>
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<tr>
<td>IgE blood test*</td>
<td>• One-time venipuncture</td>
<td>• Not affected by skin color or condition</td>
<td>Not affected by medication</td>
<td>None</td>
<td>++</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Test for large number of allergens</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Quantitative results</td>
<td></td>
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</tbody>
</table>

* More recent enzyme-based blood tests are able to quantitate IgE levels more precisely than older radioallergosorbent tests (RASTs)

Adapted from: Brand PLP. Breathe. 2007;3:345-349.
GUIDELINES FOR INCORPORATING ALLERGY TESTING

• National Heart, Lung and Blood Institute and National Asthma Education
  – Allergen avoidance and exposure to triggers
  – Use of allergy testing for patients deemed to have persistent asthma
  – Consideration of immunotherapy in specific situations

• Allergic Rhinitis and its Impact on Asthma (ARIA)
  – Recommendations for choice of treatment of AR and considerations for choosing appropriate individualized treatment

• American Academy of Otolaryngology-Head and Neck Surgery Foundation
  – A consistent and systematic approach to initial evaluation of rhinitis

GUIDELINES FOR INCORPORATING ALLERGY TESTING

- European Academy of Allergy and Clinical Immunology Task Force
  - Allergen immunotherapy cannot be considered until it is determined to which aeroallergens the patient is sensitized

- Global Initiative for Asthma (GINA)
  - Broad use of allergy testing to identify sensitization by skin testing or specific IgE blood testing
  - Allergen avoidance strategies, initiate immunotherapy, and guide pharmacotherapy

CASE CONCLUSIONS

• Allergy testing would be recommended
  – Identify triggers
  – Determine strategy for avoidance and need for immunotherapy
  – Are allergies seasonal or perennial?

• Type of testing recommended
  – Specific IgE allergen blood panel
IN SUMMARY

- Effective treatments are available for both AR and asthma, but they remain undiagnosed and undertreated

- Multiple evidence-based guidelines endorse use of allergy testing as a critical component of assessment and diagnosis; however, they are often not included in day-to-day comprehensive treatment

- Interprofessional approach to the management of asthma and AR: members of the team (e.g., PCP, specialist, nurse) should ALL be well versed at all aspects of care, including allergy testing

- Referral to a specialist from a PCP should be considered when the patient is not meeting the goals of asthma or AR therapy, or patient is younger than 3