Diagnostic Tests for Venom – IgE

- Venom-IgE (skin test or serum) is positive in 15%-25% of asymptomatic (history-neg) adults.
- History-pos / IgE-pos patients have no reaction to sting in 30% - 70% of cases.
- Presence of venom-IgE is not necessarily predictive of clinical reactivity or severity.

Diagnostic Evaluation of Patients With History of Systemic Reaction to Stings

<table>
<thead>
<tr>
<th>Test</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin test positive</td>
<td>68%</td>
</tr>
<tr>
<td>ST negative / RAST positive</td>
<td>14%</td>
</tr>
<tr>
<td>ST neg / RAST neg</td>
<td></td>
</tr>
<tr>
<td>sting challenge negative</td>
<td>17%</td>
</tr>
<tr>
<td>sting challenge positive</td>
<td>1%</td>
</tr>
</tbody>
</table>


Recombinant Allergens for Diagnosis of Hymenoptera Venom Allergy

- Muller 2009 – Sensitivity (by ADVIA-Siemens) 96% for rApi m 1; 87% for rVes v 5
- Hofmann 2011 – found 79% for rApi m 1 by ImmunoCAP
- Korosec 2011 – Sensitivity 57% for rApi m 1; 91% for nApi m 1; 100% for HBV
- Mitterman 2010 – “Use of rApi m 1, rApi m 2 and rVes v 5 allows identification of patients with HB and YJ allergy.”
- Sturm 2011 – Using rApi m 1 and rVes v 5 is insufficient, will miss genuine sensitization to other major allergens
- Korosec 2012 – Sensitivity 92% for rVes v 5 or rVes v 1 (84% Vv5, 8% Vv1); 100% for YJV

Advances in Diagnostic Materials and Methods in Insect Sting Allergy

- Recombinant venom allergens
- Diagnostic accuracy
- Cross-reactivity

- Basophil Activation Tests
- Diagnostic accuracy
- Predicting systemic reactions
Low sensitivity of commercial rApi m 1 for diagnosis of HB venom allergy. (Korosec et al. JACI 2011;128:671)

High sensitivity of CAP-FEIA rVes v 5 and rVes v 1 for diagnosis of Vespula venom allergy. (Korosec et al. JACI 2012;129: 1406)

Basophil Activation Tests: Reporting Results

Ratio of “positive” activation to 1.0 vs 0.1 mcg/ml venom (Kosnik 2005)

Proportion of basophils showing increased CD63 expression in response to allergen (cut-off: 15% – Korosec 2009, Kucera 2010; Zitnik 2011; 10% Eberlein 2012; unclear – Peternelj 2008)

CD-sens = 100 / conc for 50% maximal CD63 response (Nopp and Johansson 2009) – Zitnik 2011, Eberlein 2012

Basophil responsiveness in patients with negative venom-IgE and skin prick tests.

Basophil sensitivity in patients not responding to VIT.
Monitoring HB VIT in children with the basophil activation test. (Zitnik et al. Ped Allergy Immunol 2012;23:166)

Basophil activation predicts sting reaction after VIT (Kucera et al. J Investig Allergol Clin Immunol 2010;20:110)

**Basophil Activation / Sensitivity Tests in Insect Sting Allergy**

Kosnik 2005 – BAT predicts systemic reactions to VIT

Peternelj 2008 – Basophil CD63 expression higher in patients not responding to VIT

Korosec 2009 – CD63 expression more sensitive (92%) than ID skin tests (62%) in patients with negative serum IgE and negative venom prick tests.

Kucera 2010 – BAT a helpful tool in predicting clinical sensitivity to HB after VIT

Zitnik 2011 – Basophil activation test reflects protective immune response to HB VIT in children.

**REFERENCES 1**


**REFERENCES 2**


