C1-INH concentrate were upper airway oedema of any severity; moderate-to-severe abdominal edema; edema of face, neck, or lips and severe edema of the extremities and trunk. Clinical and laboratory data were entered into the Hungarian HAE Registry.

Results: 152 attacks out of 1392 experienced by 42 patients were treated with C1-INH concentrate (28% of attacks at home and 72% at the clinic). The distribution of C1-INH-treated attacks by location was as follows: 38% subcutaneous, 32% abdominal, 30% upper airway. In all locations, the clinical symptoms were consistently relieved by 300 IU C1-INH concentrate. An additional 500 IU dose of C1-INH concentrate was required in 4 cases only. The symptoms improved within 15 to 60 minutes of drug administration. Time to complete resolution was 24 to 48 hours in subcutaneous edema, 12 to 24 hours in abdominal attacks, and less than 12 hours when the edema involved the upper airways. No progression or recurrence of the attack was observed. Repeated administration did not reduce therapeutic efficacy of the drug. Adverse events did not occur. Transmission of viral infections (HIV, HBV, HBC, Parvo virus B19) was not detected. Comparing the first and last year of follow-up, anti-C1-INH antibodies (IgA, IgG, IgM types) did not show any relationship with the administration of C1-INH concentrate.

Conclusions: Our prospective study demonstrated that the administration of C1-INH concentrate is highly effective and safe for the treatment of edematous attacks – regardless their location – in pediatric patients with HAE-C1-INH.

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Treatment of Idiopathic Nonhistaminergic Angioedema with Icatibant
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Background: Patients with Idiopathic nonhistaminergic angioedema appear to have similar clinical features and pathogenesis as those with hereditary angioedema. Icatibant, a selective bradykinin B2 receptor antagonist, licensed for use in acute attacks of hereditary angioedema could be also effective in treating other forms of angioedema. We report a patient with idiopathic angioedema who was successfully treated with icatibant.

Methods: A 77-year-old man with a history of arterial hypertension currently treated with hydrochlorothiazide and type II diabetes under insulin treatment. He had suffered from recurrent angioedema attacks located on his tongue without urticaria during the last 7 years. Serum levels of C1-INH, C4 and C1q and C1-INH activity were normal. In spite of cessation of treatment with ACE inhibitors and RAAS-blockers (he had been treated with enalapril and losartan previously) he continued with the angioedema attacks. As no cause of angioedema could be identified and the angioedema did not response to antihistamines, the patient was diagnosed of idiopathic nonhistaminergic angioedema. In one of the episodes he was admitted at the emergency room with a swollen tongue. The edema gradually progressed in spite of the treatment with antihistamines, corticosteroids and epinephrine. Tracheotomy was considered due to the severity of the angioedema that began to cause airway compromise. After consulting the Allergy Unit, treatment with icatibant was administered.

Results: Approximately 30 minutes after the subcutaneous administration of icatibant 30 mg the symptoms improved and the angioedema resolved completely within 6 hours. The only adverse effect following the icatibant administration was pain localized in the injection site. After 5 months the patient suffered a similar attack that was also successfully treated with icatibant sc.

Conclusions: Icatibant administered subcutaneously provided an effective and well-tolerated treatment option for acute angioedema attacks in a patient with idiopathic nonhistaminergic angioedema. This form of angioedema could have a pathogenic mechanism similar to the bradikinin mediated angioedema. We suggest the use of icatibant in the treatment of severe attacks of angioedema in patients that do not respond to antihistamines, corticosteroids and epinephrine.

HYMENOPTERA ALLERGY

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Clinical Features and Diagnostic Value of Specific IGE to Component Allergen in Bee Venom Allergy in Korea
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Background: Although history taking is primary method in the diagnosis of bee venom allergy, serum specific IgE detection is critical to identify causative bee and assess the effect of immunotherapy. Component-resolved diagnosis (CRD) in allergy has been used for its high sensitivity and specificity in many allergy diseases caused by food, cat, birch, and grass pollens. The purposes of this study are to evaluate diagnostic value of serum specific IgE to 3 bee venom component allergens and observe the changes of allergen specific IgE during bee venom immunotherapy.

Methods: Fifty-six bee venom anaphylaxis patients receiving bee venom immunotherapy were recruited from Ajou University Hospital. Clinical manifestations and serum specific IgE levels to bee venom and component allergens (rApI m1 of Apidae, rVes v5 and rPol d5 of Vespidae) measured by using ImmunoCAP (Phadia, Sweden) were analyzed retrospectively.

Results: Thirty-five (62.5%) patients were male and 33 (73.3%) were atopics. Their mean age was 44.9 ± 13.8 years ranged from 11 to 73 years. Local reactions were found in 13 (23.2%) patients, while systemic reactions, in 43 (76.8%) patients. The most frequent manifestation was anaphylaxis which were severe (37.5%) and moderate (39.3%) manifestations followed by urticaria and angioedema. Yellow Jacket (80.8%) was the most prevalent bee followed by yellow hornet, white faced hornet, honey bee and paper wasp at the time of diagnosis with concurrent sensitization in both Apidae and Vespidae at 70.9% patients. The positive predictive value (PPV) of serum specific IgE levels to rVes v5 and rPol d5 were 85.7 and 87.5%, and they significantly correlated with conventional serum specific IgE level (r = 0.762 and r = 0.757, respectively), however, PPV of rApI m1 was only 34.8% at the time of initial diagnosis. After 3 years of bee venom immunotherapy, all kinds of bee venom specific IgE levels tended to decline compared to those collected before allergen immunotherapy, especially in component specific IgE to Vespidae.

Conclusions: Yellow jacket sting and male gender may be risk factors for bee venom allergy in Korea. Component allergen specific IgE to Vespidae, not Apidae had a diagnostic and monitoring value comparable to conventional specific IgE in bee venom allergy.

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Is Basophil Specific Response to Hymenoptera Venom Related to T Regulatory Cells?
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Background: The exact mechanism of systemic hypersensitivity to venom is not exactly understood. It is suggested T cells with regulatory potential can downregulate other T cell subsets and effector cells, ex. mast cell or
basophils. We focused on relationship of specific basophil reactivity in relationship to proportion of regulatory T cells.

**Methods:** Forty-five patients with history of systemic symptoms of allergy to Hymenoptera venom were included. Basophil reactivity before the treatment and after one year of allergen immunotherapy (AIT) was measured by CD63 expression, CD203c marker used for basophil identification. Cells were stimulated by aqueous solution of allergen in concentration range 0.01 to 1 µg/mL. T regulatory cells were identified as CD4 positive, CD25 bright and CD127 negative at the same interval of treatment. Monoclonal antibodies conjugated with fluorochromes were used, measured by FACScalibur. Paired t test and correlation analysis used for statistical evaluation.

**Results:** Median Treg proportion before therapy was 2.160, after IT 1.960, basophil specific response (proportion of CD63 positive cells) at the same interval were 3.65 and 4.11 at 0.01 µg/mL, 13.1 and 16.1 for 0.1 µg/mL and 33.85 and 40.8 for 1 µg/mL. All differences were not statistically significant. Differences of basophil activation were not significantly related to proportion of T regulatory cells.

**Conclusions:** In our group of patients with HV allergy, treated by AIT, we did not found any relationship between basophil specific activation during allergen immunotherapy and proportion of T regulatory cells.

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**90 Improving the Diagnosis of Hymenoptera Venom Allergy: Component Resolved Diagnosis**

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**Background:** Up to 3% of the general population suffers from potentially life-threatening systemic reactions after honeybee and wasp stings. Unfortunately, there are still individuals who have a convincing history of an anaphylactic event, but lack the necessary diagnostic, making difficult the decision for immunotherapy. Our aims were to evaluate the feasibility of using recombinant allergens in the Basophil activation test (BAT) for the diagnosis of Hymenoptera allergy and to develop a high-throughput diagnostic device combining the advantages of basophil activation tests with a panel of recombinant allergens: rVes v 1, rVes v 2, rVes v 3, rVes v 5, rApi m 1, rApi m 2, rApi m 3 and rApi m 5.

**Methods:** Basophil activation test (BAT) and measurement of specific IgE were performed on 47 wasp venom, 14 Honeybee venom allergic patients and 17 healthy controls. Specificity and sensitivity of BAT performed with recombinant His-tag purified wasp venom allergens Ves v 1, Ves v 2, Ves v 3 and Ves v 5, recombinant honeybee venom allergens Api m 1, Api m 2, Api m 3 and Api m 5 and commercial extracts have been compared. Each patient had a history of grade I or II anaphylaxis after an insect sting. All patient sera were collected before initiation of SIT.

**Results:** BAT performed with the panel of recombinant allergens markedly increased the specificity and the sensitivity in the detection of wasp venom allergic subjects.

**Conclusions:** Basophil activation test provides a valuable new in vitro method for the detection of allergy to wasp venom and may supplement routine tests for allergy diagnosis in problematic cases. Recombinant allergens might help to dissect relevant allergens for basophil degranulation.

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**92 Serum CTLA-4 AND IL-10 in Hymenoptera Venom Immunotherapy: Equivalence of Different Induction Regimens**

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**Background:** The standard venom immunotherapy involves the administration of the maintenance dose every 4 to 6 weeks. This regimen may have compliance problem especially in the long term, thus extended intervals have been proposed. We prospectively compared the efficacy of 3- or 4-month extended maintenance dose and the conventional regimen.

**Methods:** Patients receiving immunotherapy of a single venom were offered the delayed maintenance dose, and were then followed-up for field re-stings. Only the re-stings by the insect for which the patients received immunotherapy were considered. A matched group of patients receiving the conventional maintenance were used for comparison, by univariate and multivariate analysis.

**Results:** Fifty-two patients (44 male, 8 female, mean age 52 years) were certainly re-stung on 113 occasions by the insect for which they were receiving immunotherapy. 90 re-stings occurred during the 3-month maintenance and 23 during the 4-month maintenance. The control group, on conventional protocol with one single venom, included 103 patients (79 male, 24 female, mean age 41 years) certainly re-stung on 160 occasions by the specific insect. The rate of re-sting without reaction was 97% in the delayed maintenance and 82% in the conventional group with a significant difference in favour of the former (P = 0.01). None of the variables considered resulted predictive for systemic reactions by logistic regression analysis.

**Conclusions:** The delayed maintenance dose approach is at least as effective and safe as the conventional one. The 4-month maintenance seems to be the best option in term of convenience and economic save.

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**91 Efficacy of Venom Immunotherapy Given Every 3 or 4 Months. A Direct Prospective Comparison With the Conventional Regimen**

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**Background:** Cytotoxic T lymphocyte associated gene-4 (CTLA-4) is involved in the activation pathways of T lymphocytes. It has been shown that the circulating form of CTLA-4 is elevated in patients with hymenoptera allergy and can be downregulated by immunotherapy. We assessed the effects on CTLA4 of venom immunotherapy given by different induction protocols (classic, rush or ultra-rush).

**Methods:** Sera from patients with hymenoptera allergy were collected at baseline and at the end of the induction phase. In the classical regimen, the induction lasted 6 weeks, in the rush protocol it lasted 3 days, and in the ultra-rush maintenance was achieved in 24 hours. Soluble IL-10 was assayed in the same samples for comparison. CTLA-4 and IL10 were measured by commercial immunoassays.

**Results:** Seventy-six patients (52 male, mean age 35 years) were studied. Of them, 30 underwent the classic induction, 22 the rush and 24 the ultra rush. Soluble CTLA-4 was detectable in all patients at baseline, and significantly decreased at the end of the induction in all groups, thus irrespective of its duration. Of note, a significant decrease of sCTLA-4 could be seen already at 24 hours. In parallel, the same behaviour was observed with IL-10 that significantly increased at the end of the induction.