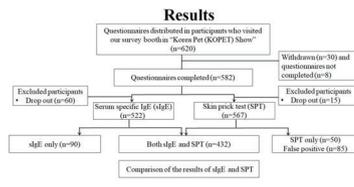


Serum specific IgE is more reliable than skin prick test in diagnosing dog and cat allergies

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Background/Aims: Dog and cat allergies affect 10-20% of population worldwide. However, compared to other allergies, diagnostic roles of serum specific IgE (sIgE) and skin prick test (SPT) in dog and cat allergies are not sufficiently evaluated yet. The objective of this study is to evaluate these roles in Korean adults with dog or cat allergies. **Methods:** A total of 582 participants who attended 2018 pet exhibition in Korea were asked to answer questionnaires regarding dog and cat allergies, to undergo SPT, and to have their blood drawn for sIgE measurements to evaluate sensitization to dog and cat allergens. We measured serum levels of sIgE using ImmunoCAP[®] (ThermoFisher, Uppsala, Sweden) and performed SPTs using three commercial allergen extracts available in Korea (Lofarma, Milano, Italy; Hollister-Stier, Spokane, WA, USA; Bencard, Bradford, UK). Mean wheal diameter equaled to or more than 3 mm, allergen-histamine ratio (AHR) equaled to or more than 1 or any wheal at 15 minutes in SPT, and sIgE levels equaled to or more than 0.01, 0.35 or 3.5 kU/L were considered to indicate positive results, respectively. **Results:** In dog allergies, the highest values of positive predictive value (PPV), negative predictive value (NPV), sensitivity (Sn) and specificity (Sp) were 43.8%, 84.2%, 46.2% and 97.5% in SPTs, respectively, and 58.3%, 88.8%, 67.6% and 94.0% in sIgE measurement, respectively. With SPTs and sIgE measurement put together, the highest of these values were 32.2%, 90.2%, 70.5% and 64.3%, respectively. In cat allergies, the highest values of PPV, NPV, Sn and Sp were 52.0%, 86.5%, 61.3%, and 95.6% in SPTs, respectively, and 58.5%, 90.3%, 75.4%, and 91.5% in sIgE measurement, respectively. With SPTs and sIgE measurement put together, the highest of these values were 41.0%, 91.7%, 80.9% and 66.4%, respectively. **Conclusions:** In diagnosing dog and cat allergies, measurement of sIgE is generally more reliable than SPT. With combination of two modalities, only a little improvement of Sn and NPV can be obtained.



| Age (years) | Mean (SD) | 30.4 ± 9.3 |
|--|---------------|--------------------|
| < 19 | 59 (10.1%) | |
| 20-29 | 253 (43.5%) | |
| 30-39 | 181 (31.1%) | |
| 40-49 | 66 (11.3%) | |
| 50-64 | 21 (3.6%) | |
| > 65 | 2 (0.3%) | |
| Gender | Female | 464 (79.7%) |
| | Male | 118 (20.3%) |
| Ever diagnosis of allergic diseases | 66.8% | |
| Allergic rhinitis | 38.9% | |
| Allergic conjunctivitis | 17.2% | |
| Atopic dermatitis | 11.3% | |
| Food allergy | 9.2% | |
| Asthma | 6.5% | |
| Chronic urticaria | 6.2% | |
| Drug allergy | 4.1% | |
| Family history of allergic diseases | 42.8% | |

| Dog | Any | 114 (19.6%) |
|-------------------------|-------|-------------|
| Rhinitis symptoms | 81.6% | |
| Conjunctivitis symptoms | 64.5% | |
| Cutaneous symptoms | 55.3% | |
| Cough | 29.8% | |
| Asthma symptoms | 14.3% | |
| Others | 1.25% | |
| Cat | Any | 134 (23.0%) |
| Rhinitis symptoms | 76.9% | |
| Conjunctivitis symptoms | 69.4% | |
| Cutaneous symptoms | 53.7% | |
| Cough | 27.6% | |
| Asthma symptoms | 15.7% | |
| Others | 0.8% | |

| | PPV | NPV | Sn | Sp | Agreement with reference in absence of cat allergy |
|---------------------------|------|------|------|------|--|
| SPT only (n=50) | 20.7 | 84.2 | 46.2 | 97.5 | 50 |
| sIgE only (n=90) | 58.3 | 88.8 | 67.6 | 94.0 | 90 |
| Both sIgE and SPT (n=432) | 32.2 | 90.2 | 70.5 | 64.3 | 432 |

| | Dog | Cat |
|-----------------|------|------|
| Lofarma | 100% | 100% |
| Hollister-Stier | 100% | 100% |
| Bencard | 100% | 100% |
| ImmunoCAP | 100% | 100% |

| Extract | Company | Volume | Concentration |
|-----------------|---------|---------|---------------|
| Lofarma | 100% | 0.05 mL | 1% |
| Hollister-Stier | 100% | 0.05 mL | 1% |
| Bencard | 100% | 0.05 mL | 1% |