

Intralymphatic Immunotherapy Alleviates Allergic Symptoms During Allergen Exposure in Daily Life

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Previously, we reported that intralymphatic immunotherapy (ILIT) can cause serious local or systemic hypersensitivity reactions.¹ However, patients who experienced those reactions in our study were eager to receive additional injections because they experienced alleviation of allergic symptoms, especially during exposure to causal allergens in daily life.

We asked 11 patients with allergic rhinitis who were allergic to *Dermatophagoides farinae* (Df), *Dermatophagoides pteronyssinus* (Dp), dog or cat to score their allergic symptoms during exposure to house dust, dogs, or cats in daily life using a visual analogue scale (VAS) ranging from 0 to 100 mm. We regarded patients as being exposed to house dust when they were cleaning rooms or making beds, or when they were in bed.^{2,3} Patients were also requested to rate their level of agreement with the statements “allergen-specific immunotherapy can reduce allergic symptoms,” as well as their willingness to pay for allergen-specific immunotherapy (AIT) using a VAS ranging from 0 to 100 mm before, and 4 months and 1 year after ILIT.

As a result, rhinorrhea, sneezing, itchy nose, itchy eyes, nasal obstruction, and postnasal drip during exposure to house dust, dogs and/or cats in daily life were alleviated 4 months and 1 year after the first day of ILIT (Figure).

Patients also showed a greater level of agreement with the statement “allergen-specific immunotherapy can reduce allergic symptoms” ($P < 0.05$ compared to baseline; Suppl. Fig. 1), and they were more willing to pay for AIT after skin prick tests, nasal allergen provocation tests (NAPTs), and ILIT ($P < 0.05$ compared to baseline; Suppl. Fig. 2) than before they received those tests and ILIT.

In conclusion, ILIT alleviates allergic symptoms during allergen exposure in daily life, helps patients become more aware of AIT, and increases their willingness to pay for AIT. ILIT as a new

AIT modality may satisfy unmet needs of patients with allergic diseases. However, ILIT was also found to provoke serious hypersensitivity reactions in our previous report; thus, investigators should seek to develop new immunomodulatory methods with a low risk of serious adverse reactions and improved therapeutic efficacy.

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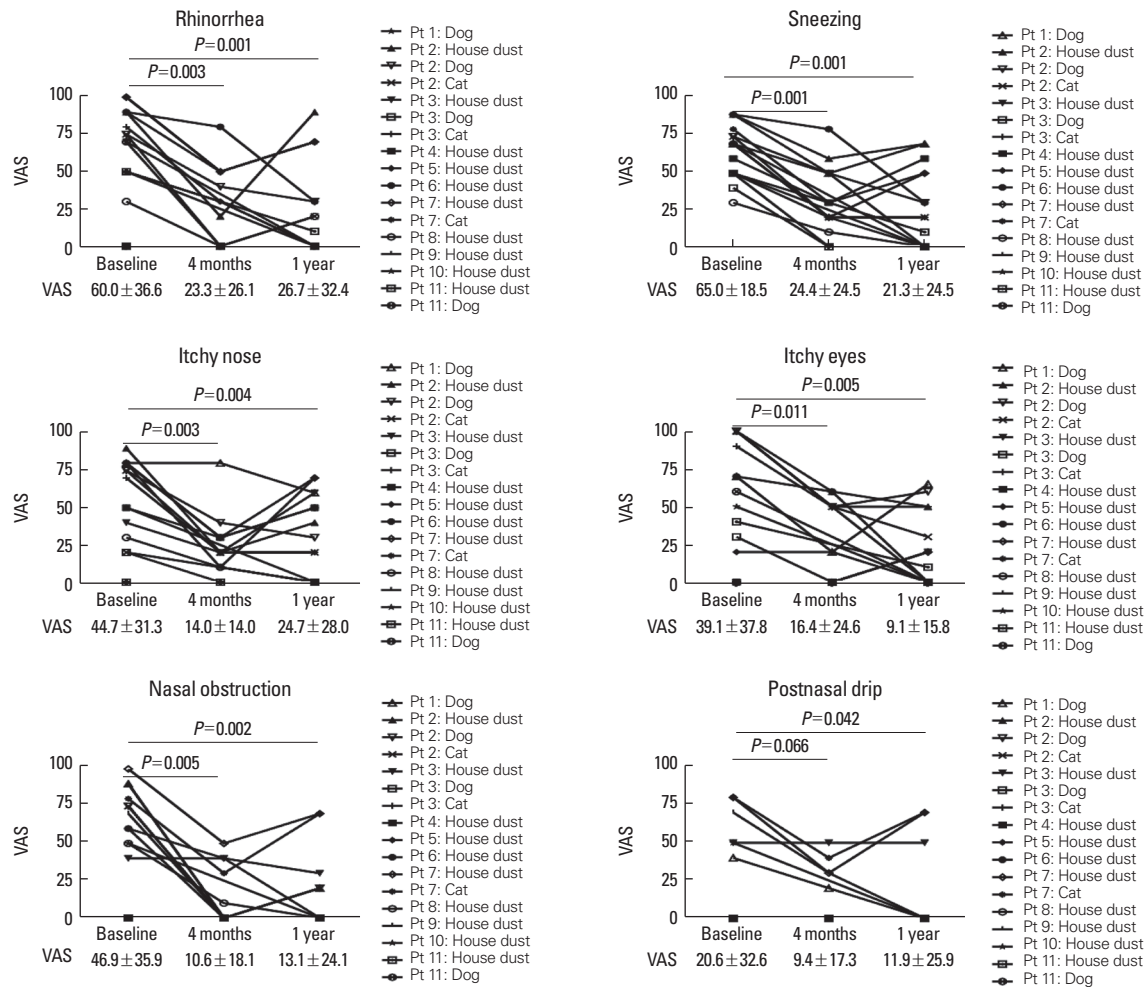
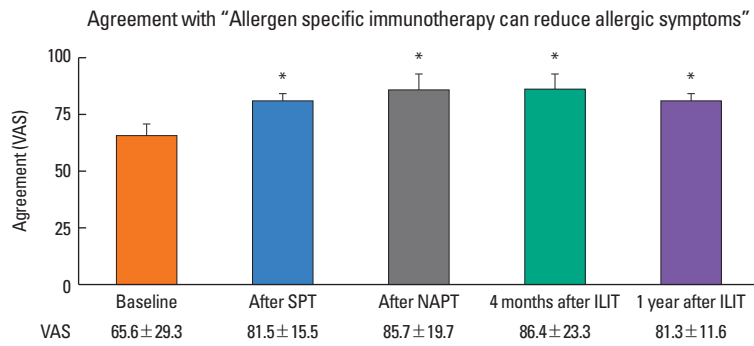
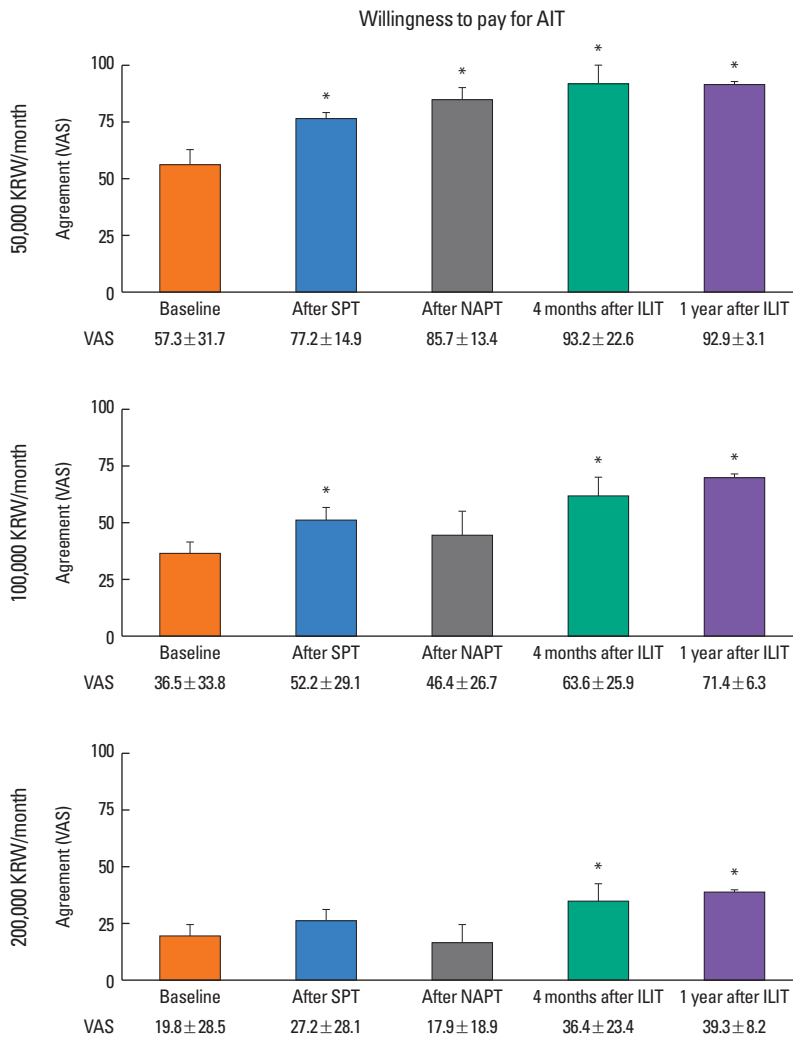


Figure. Changes in degrees of allergic symptoms provoked by exposures to the causal allergen in daily life. VAS ranges from 0 to 100 mm. Data are shown as mean ± SD. (A) rhinorrhea, (B) sneezing, (C) itchy nose, (D) itchy eyes, (E) nasal obstruction, and (F) postnasal drip. VAS, visual analogue scale; Pt, patient.



Supplementary Fig. 1. Patients' agreement with the statement "allergen-specific immunotherapy can reduce allergic symptoms" before and after a SPT, NAPT and ILIT. VAS ranges from 0 to 100 mm. Data are shown as mean \pm SD. ILIT, intralymphatic immunotherapy; NAPT, nasal allergen provocation test; SPT, skin prick test; VAS, visual analogue scale. * $P < 0.05$ compared to baseline.



Supplementary Fig. 2. Patients' willingness to pay for AIT before and after a SPT, NAPT and ILIT. VAS ranges from 0 to 100 mm. Data are shown as mean \pm SD. AIT, allergen-specific immunotherapy; ILIT, intralymphatic immunotherapy; KRW, Korean won; NAPT, nasal allergen provocation test; SPT, skin prick test; VAS, visual analogue scale. * $P < 0.05$ compared to baseline.