# Greater real-life diagnostic efficacy of allergen molecule-based diagnosis for prescription of immunotherapy in an area with multiple pollen exposure

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**Abstract**  
BACKGROUND:  
Allergen molecule-based diagnosis has been suggested to facilitate the identification of disease-causing allergen sources and the prescription of allergen-specific immunotherapy (AIT). The aim of the current study was to compare allergen molecule-based IgE serology with allergen extract-based skin testing for the identification of the disease-causing allergen sources. The study was conducted in an area where patients are exposed to pollen from multiple sources (trees, grasses, and weeds) at the same time to compare the diagnostic efficiency of the 2 forms of diagnosis.  
  
METHODS:  
Patients from Astana, Kazakhstan, who suffered from pollen-induced allergy (n = 95) were subjected to skin prick testing (SPT) with a local panel of tree pollen, grass pollen, and weed pollen allergen extracts and IgE antibodies specific for marker allergen molecules (nArt v 1, nArt v 3, rAmb a 1, rPhl p 1, rPhl p 5, rBet v 1) were measured by ImmunoCAP. Direct and indirect costs for diagnosis based on SPT and marker allergen-based IgE serology as well as direct costs for immunotherapy depending on SPT and serological test results were calculated.  
  
RESULTS:  
The costs for SPT-based diagnosis per patient were lower than the costs for allergen molecule-based IgE serology. However, allergen molecule-based serology was more precise in detecting the disease-causing allergen sources. A lower number of immunotherapy treatments (n = 119) was needed according to molecular diagnosis as compared to extract-based diagnosis (n = 275), which considerably reduced the total costs for diagnosis and for a 3-year treatment from EUR 1,112.30 to 521.77 per patient.  
  
CONCLUSIONS:  
The results from this real-life study show that SPT is less expensive than allergen molecule-based diagnostic testing, but molecular diagnosis allowed more precise prescription of immunotherapy which substantially reduced treatment costs and combined costs for diagnosis and treatment.  
  
KEYWORDS:  
Allergen; Allergen-specific immunotherapy; Allergy; Component-resolved diagnosis; Diagnosis; Economic efficacy; Immunotherapy prescription; Molecular allergology; Skin prick testing  
  
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