

Letter

Eutamias sibiricus: a new pet as a cause of asthma

The effects of pet exposure on the development of respiratory symptoms have become an increasingly common problem. Allergic diseases are frequent, and their prevalence and severity differ in the different regions of the world. Any animal, whether mammal, reptile, or insect can cause allergy in a sensitized person. In this report, we describe an unusual case of exclusive allergic sensitization to Korean squirrel (*Eutamias sibiricus*), commonly called chipmunk, which belongs to the genus *Tamias* from the family Sciuridae; there are approximately 25 species under this name, mainly in North America, although it is a species native to Asia. The Korean squirrels belong to this group; in comparison with other rodents, Korean squirrels have a sharp head and small ears. Adults are between 14–19 cm long, and they weight between 100–125 g. Its color can range from light brown to reddish, and its hair is soft and short. The name chipmunk comes from the several lists that cover its body. They are usually quiet and live in a cage, so it is easier to clean them; taking care of them is not difficult and does not require a lot of time.

We present the case of a 47-year-old woman diagnosed as having latex allergy with no other known illnesses. She was referred to our allergy clinic because she presented with persistent rhinoconjunctivitis and daily asthmalike symptoms, shortness of breath, and wheezes, identified by her physician. During the last year she had had a Korean squirrel in her house.

The results of a skin prick test with common inhalant allergens were positive for *Cupressus* and grass pollen and negative for animal dander (rabbit, horse, rat, cat, dog, mouse, and hamster). Prick by prick skin test with Korean squirrel dander was performed, being positive with a wheal of 8 mm in diameter.

Spirometry revealed normal values (forced vital capacity [FVC], 2.86 L; forced expiratory flow in 1 second [FEV₁], 2.39 L; FEV₁/FVC ratio, 83%), a negative bronchodilator test result, and a fraction of exhaled nitric oxide of 73 ppb.

A methacholine test result at baseline was negative (provocation concentration that caused a decrease in FEV₁ of 20%, >16 mg/mL). Specific bronchial challenge with Korean chipmunk dander extract was performed, and she had an immediate asthmatic reaction with a maximal decrease in FEV₁ of 18.5%, dyspnea, and oral pruritus; no late asthmatic reaction was observed. Bronchial challenge with methacholine was assessed 24 hours after the specific challenge, with negative results (provocation concentration that caused a decrease in FEV₁ of 20%, >16 mg/mL). No changes in fraction of exhaled nitric oxide were observed.

Korean chipmunk dander extract was made and used at a concentration of 2.87 mg/mL for in vitro tests. Sodium dodecylsulfate–polyacrylamide gel electrophoresis was performed with this extract under reducing conditions. One prominent protein band at 15 kDa was observed. Immunoblots were also performed with the

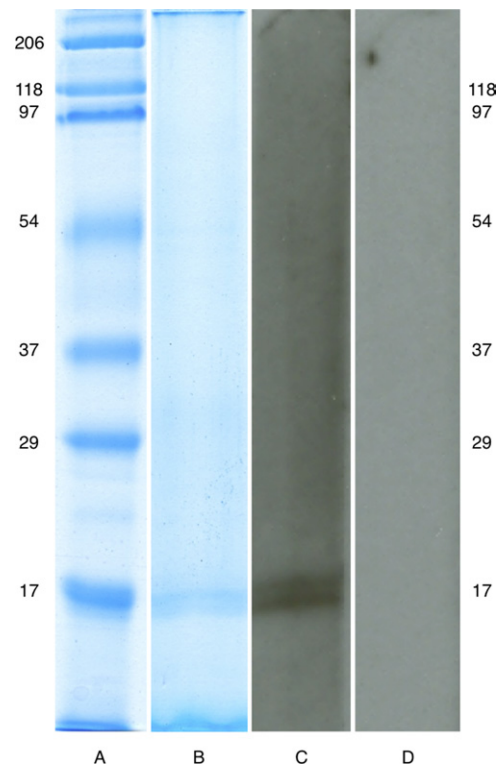


Fig 1. Sodium dodecylsulfate–polyacrylamide gel electrophoresis with Korean squirrel extract (A: molecular weights, B: Korean squirrel extract, 40 µg) and IgE immunoblot with Korean squirrel extract (C: patient serum, D: negative control serum).

extract and patient serum (one-third dilution), obtaining a specific immunoglobulin E (IgE)-binding band at the same molecular weight of 15 kDa (Fig 1).

Mass spectrometry was performed by digestion with trypsin to identify this protein. De novo sequencing was performed, and 2 peptides were obtained (YEMEGVDR and HIVMDGDGLAVNVTPFR), which did not present significant homology with known proteins after searching in a nonredundant protein sequence database (National Center for Biotechnology Information). This protein could be a new allergic protein that has not been identified in pets yet.

The patient was advised to remove the chipmunk from the house, and she has had no symptoms since she gave the chipmunk away.

The animals currently considered as pets are substantially different from the fish, cats, and dogs that were so usual 20 years ago. People look for much more exotic creatures as pets, and

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rodents in particular are becoming popular not only among children but also adults. Hamsters were the first rodents that became popular and also became a new cause of asthma,^{1,2} but recently many more cases of allergy to several other kinds of pets have been described.^{3,4}

We present the first case report, to our knowledge, of asthma due to Korean chipmunk hair in which an IgE mechanism has been demonstrated. The protein responsible for this allergy could be a new allergen different from the lipocalin family proteins.

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