

Case report

A case of fallow deer allergy

Cross-reactivity between fallow deer and horse allergy

Huwylar T, Wüthrich B. A case of fallow deer allergy. Cross-reactivity between fallow deer and horse allergy
Allergy 1992; 47: 574–575.

T. Huwylar, B. Wüthrich

Allergy Unit, Department of Dermatology,
University Hospital, Zurich, Switzerland

We report the case of a 25-year-old housewife, a native of Mexico City, with rhinitis and asthma induced by exposure to fallow deer in an animal park close to her home. In the literature, we could find only one previous case.

The patient presented a polyvalent IgE sensitization in prick skin tests and RAST to several animals' dander and epithelia, but RAST inhibition experiments showed a cross-reactivity only between fallow deer and horse allergen extracts.

Key words: allergic asthma; fallow deer allergy; horse allergy; RAST inhibition.

Prof. Dr B. Wüthrich
Allergy Unit, Department of Dermatology
University Hospital
Gloriastrasse 31
CH-8091, Zurich
Switzerland

Accepted for publication 27 December 1991

An allergy to fallow deer is rare. The single case reported in the literature presented with multiple allergies triggered by inhalation exposure to horse, cattle and rabbit as well as to fallow deer (2). Here, we present another case of fallow deer allergy and discuss the possibility of a cross-reactivity between fallow deer and horse allergens.

Case report

A 25-year-old woman from Mexico City, allergic to dogs, cats, horses and rabbits since early childhood, suffered from severe asthmatic attacks from the beginning of her stay in Switzerland without being in contact with pets. Upon her temporary return to Mexico City, her symptoms were immediately relieved. The first evening after she returned to Switzerland, she again experienced a severe attack.

Skin tests and provocation test

The prick test revealed a sensitivity to guinea pigs, dogs, horses, cats and rabbits but not to cattle, rats, mice and other routinely tested sources of allergens. In the scratch test, the patient showed a positive reaction to her own house dust, taken from the bag of the vacuum cleaner. No further investigations were done with the house dust sample. Prick and

intracutaneous tests with house dust mites and storage mites were all negative.

The patient began to suspect she was reacting to the fallow deer in the animal park close to her house. We thus performed a scratch test with the hair of the animal. She responded with a strong allergic reaction including redness, swelling and pseudopodia. Upon intranasal challenge with finely minced hair, she immediately developed a violent asthmatic attack that required intravenous and inhalant interventions.

Table 1. RAST values for serum stored at 4 °C with and without minced fallow deer hair

	Serum without fallow deer hair RAST/class (PRU/ml)	Serum with fallow deer hair RAST/class (PRU/ml)
Cat epithelium (e1)	3 (13.20)	3 (13.70)
Dog dander (e2)	2 (1.69)	2 (1.58)
Horse dander (e3)	2 (1.15)	1 (0.68)
Rabbit epithelium (e82)	2 (0.87)	2 (0.87)
Mouse- (e71), rat- (e73), hamster- (e84) epithelia	1 (0.41–0.51)	1 (0.39–0.52)
Cow (e4), guinea pig (e6)	0	0
Total IgE	510 U/ml	380 U/ml

Table 2. RAST inhibition with fallow deer extract. 10 µl of fallow deer extract at various concentrations (10%, 1% and 0.1% solutions) and 10 µl of an isotonic sodium chloride solution were added to 100 µl patient serum. Results are presented in PRU/ml

Patients	Cat epithelium (e1)				Dog dander (e2)				Horse dander (e3)			
	NaCl	10%	1%	0.1%	NaCl	10%	1%	0.1%	NaCl	10%	1%	0.1%
GM (M) 22.1.55	312.6	311.4	311.3	311.7	444.0	432.5	438.6	439.1	35.7	22.7	23.3	33.8
BS (F) 6.4.67	427.9	434.6	439.2	439.8	34.4	33.9	34.4	34.8	36.4	20.4	21.5	22.3
GH (M) 17.9.58	551.9	560.2	566.7	585.2	568.8	556.8	560.8	576.2	422.8	33.5	36.6	38.6
LK (M) 29.8.56	424.3	427.4	428.0	426.0	21.8	21.5	21.4	21.5	35.7	22.4	33.9	34.6

RAST and RAST inhibition tests

Since the patient had experienced an allergic reaction the first time she was exposed to fallow deer, we postulated a cross-sensitivity between allergens of fallow deer and other mammals. We thus performed a simplified RAST inhibition: the patient's serum was stored overnight at 4°C, with and without minced deer hair. Both sera were then analysed for specific IgE (Pharmacia-RAST) to different animals' epithelia, hair and dander. Only the RAST value with horse dander was clearly inhibited by fallow deer hair (Table 1), which indicates a cross-reactivity between fallow deer and horse antigens. Attempts were not done to characterize the allergens by immunoblottings.

We then prick-tested 404 atopic patients of our allergy outpatient clinic with a fallow deer and horse dander extract in glycerol. Of these patients, 265 suffered from an atopic disorder. Fourteen atopic patients (mean age 27 ± 7 ; 7 F, 7 M) showed a positive reaction to both fallow deer and horse extract, whereas 24 reacted to horse extract only. None reacted to fallow deer only. The association between fallow deer and horse allergy is highly significant (χ^2 88.3, $p < 0.0001$). Since no cases with isolated fallow deer allergy were observed, the relative risk of patients with horse allergy to coreact to fallow deer cannot be computed precisely. However, it is at least in the magnitude of > 100 (95% confidence bounds 16–1051).

Finally, RAST inhibition with fallow deer extract was performed on 4 patients who had shown posi-

tive skin reactions to cats, dogs and horses as well as to fallow deer. In all 4 cases, the titer of specific IgE to horse dander decreased in a dose-dependent manner with the concentration of fallow deer extract used (Table 2). IgE to cat epithelium and dog dander were not influenced by the deer extract.

Conclusions

On the basis of this data, we postulate that there is a cross-sensitivity between fallow deer and horse allergens. Since only some of the patients sensitive to horse coreacted to fallow deer, it seems that fallow deer antigens cross-react with only one or a few of the epitopes of horse dander antigens. A similar cross-reactivity is described for cat and dog allergen extracts (1, 3).

Acknowledgements

We would like to thank Mrs Sylvia Blumer, Mrs Irène Cuhat and Mrs Susanne Marti-Wyss for technical assistance, and Peter Elsner, MD, Zurich for reviewing the manuscript and statistical calculation.

References

1. BRAND R, YMAN L. Dog dander allergens. *Int Arch Allergy Appl Immunol* 1980; 61: 361–70.
2. MUNRO-ASHMAN D. Sensitivity to deer scurf. *Acta Allergol* 1963; 18: 168–9.
3. VIANDER M, VALOVIRTA E, VANTO T, KOIVIKKO A. Cross-reactivity of cat and dog allergen extracts. *Int Arch Allergy Appl Immunol* 1983; 71: 252–260.

This document is a scanned copy of a printed document. No warranty is given about the accuracy of the copy. Users should refer to the original published version of the material.