

THE DIAGNOSTIC VALUE OF THE ARTUVETRIN INTRADERMAL SKIN TEST SET IN THE DIFFERENTIAL DIAGNOSIS OF THE ALLERGIC DOG SKIN DISEASES

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Abstract. The allergic dog skin diseases differential diagnosis in most part of Transylvania is based on history, clinical examination and therapeutically results. In this study the *Artuvetrin* intra dermal skin tests (IDT) were used to investigate whether a dog is allergic to specific allergens such as grass pollen, tree pollen, mites, insects. A number of 27 dogs with different skin lesions were tested with 16 specific *Artuvetrin* dog allergens. The majority of dogs had immediate positive skin reactions, with appearance of a wheal and nodule at the injection side, to the dust mite (*Dermatophagoides farinae*)(18 cases), followed by a positive reactivity to the *Ctenocephalides spp.* extract (15 cases), the *Tyrophagus putrescentiae* and *Acarus siro* (3 cases). Delayed reactions were described just in 3 cases. 66, 66% of dog with a positive dust mite reaction had an indoor habitat.

So using *Artuvetrin* skin test set all the 27 dogs were diagnosed with one of the three most frequent allergic skin diseases. In conclusion, the dog allergic dermatitis differential diagnosis can based on corroboration of history's findings, clinical examinations and the result of *Artuvetrin* set IDT.

INTRODUCTION

Allergic skin diseases in dogs are one of the most frequent dermatological problems. The final diagnosis is based on correlation of historical, clinical findings and para clinical examines like intra dermal skin test and serological analyses (Foster et all. 2003). In most small animal clinics in Transylvania for the intra dermal skin test in dogs and cats there are using human allergens which are not recommended by canine dermatologists.

The aim of this study was to investigate whether a dog is allergic to specific allergens with the *Artuvetrin* intra dermal skin tests during author's dermatological consultation in few small animal practices in Cluj Napoca, Târgu Mureş and Sighişoara.

MATERIAL AND METHOD

27 dogs with different breeds, ages and of both sexes and with different dermatological lesions were tested. Intradermal skin tests were made by using the *Artuvetrin* skin test, purchased from Netherlands and having the composition presented in Table 1.

The intra dermal skin tests (IDT) were carried out by the standard IDT method; all dogs were injected with the 16 specific allergens. A positive reaction to any allergen was identified by multiple, visible and palpable wheals on the dog skin and was either equal to or larger than a reaction halfway between the reactions at the sites of injection of the positive and negative controls (Scott et all., 2001).

Table 1.

The Artuvetrin test set compounds

1. Negative control
2. Positive control (histamine)
3. Grass pollen mixture
4. Tree pollen mixture I
5. Tree pollen mixture II
6. Weed pollen mixture
7. <i>Tyrophagus putrescentiae</i>
8. <i>Dermatophagoides farinae</i>
9. <i>Lepidoglyphus destructor</i>
10. <i>Dermatophagoides pteronyssinus</i>
11. <i>Acarus siro</i>
12. Dog epithelium
13. Cat epithelium
14. Flea
15. <i>Aedes communis</i>
16. <i>Periplanata americana</i>

RESULTS AND DISCUSSIONS

Twenty seven dogs were used in the study, examined clinically and tested with the Artuvetrin intra dermal skin test. According to the history's information and clinical examination we had the following results: 59, 23% of dogs came from an indoor environment and just 40, 77% of them were spending there time 100% outdoor. The outdoor dogs had symptoms just one or two times per year and they had positive IDT reaction in main cases to flea antigen, tree pollen mixture I., weed pollen mixture.

A 68, 75% of indoor dogs had allergy suggesting symptoms all over the year and these dogs reacted to dust mites and other food mites.

During the clinical observation we recorded the type, distribution and configuration of the lesions. Pruritus was the most predominant symptom which suggested an evolution of an allergic dermatitis. There were described the simple presence of abdominal and axial wheal (5 cases) focal periocular alopecia (5 cases), diffuse alopecia (13 cases) (Fig.1), papules (8 cases), crusts, scales (3 cases), excoriation on the dorsum (3 cases), rich seborrhea (11 cases), annular lesions (2 cases), interdigital hyperpigmentation from the legs (5 cases). Two dogs had a serous conjunctivitis, six dogs erythematous ceruminous otitis externa, and just one dog with chronic rhinotracheitis.

The clinically classic form of flea allergic dermatitis it was identified in just 6 cases characterized by a concentration of the primary and secondary lesions especially the caudal back area, tail base, perineum and caudo- ventral area of the abdomen represented by papular eruption, crust, seborrhea (Fig.2). In just six dogs were found a small number of fleas and flea excrements. This failure can be explained by the efficient grooming behavior of sensitized dogs.

One of the other laboratory exams was the parasitological analyses of the dog feces. Four dogs were identified with a *Dypilidium caninum* natural infestation which can prove the presence of a flea infestation in these dogs because *Ctenocephalides spp.* is an intermediary host for this worm.

Corroborating the history's findings and the results of the clinical examination all twenty seven dogs were tested with the Artuvetrin intra dermal skin test for an etiologic diagnosis of allergic dermatitis.

All 27 dogs reacted to the positive control (histamine) and had a low level of pruritus at the inoculation site but without other secondary symptoms. The diversity of positive skin

reactions to the *Artuvetrin* allergens is presented in the Fig. 3.

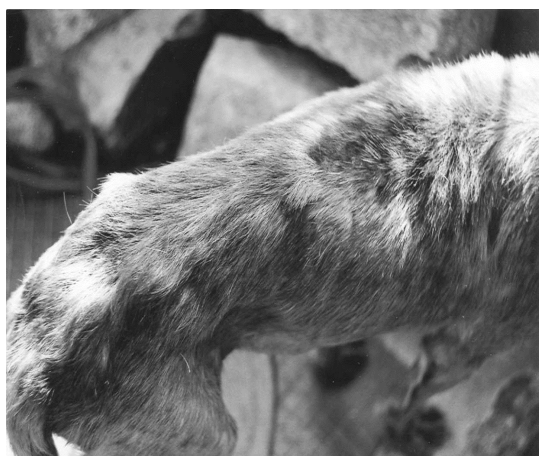


Fig. 1. Diffuse alopecia in a flea allergic dog



Fig. 2. *Hot spot* in a flea allergic dog

The majority of dogs had immediate positive skin reactions, with appearance of a wheal and nodule at the injection side, to the dust mite (*Dermatophagoides farinae*) (18 cases), followed by a positive reactivity to the *Ctenocephalides* spp. extract (15 cases), the *Tyrophagus putrescentiae* and *Acarus siro* (3 cases). Delayed reactions were described just in 3 cases, which results are according with the related dates from Reedy et al. (1999): a 10% of dog can develop delayed intradermal skin reactions, most of flea and cockroach extracts. 66, 66% of dog with a positive dust mite reaction had an indoor habitat.

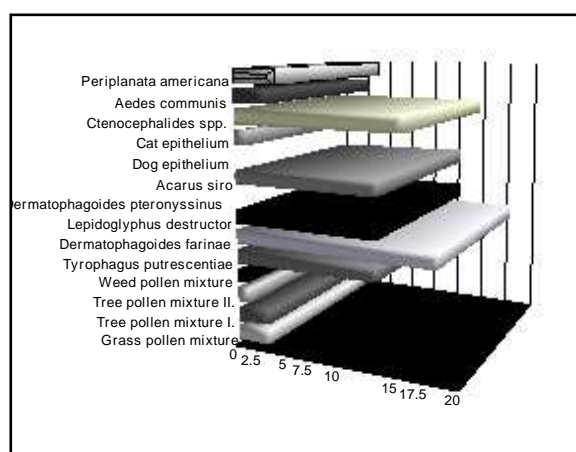


Fig.3. The profile of the immediate positive skin reactions to IDT

Nagy et al. (2006) consider that the intensity of the FAD clinical symptoms and the flea extract positive reactivity is influenced positive by the presence of the fleas. In our cases 46, 66% of dogs with a positive reaction to the flea extract had in the same time a natural flea infestation, on the rest we didn't identified any fleas. In the same time a study of Solcan et al. (2003) related a low incidence of flea allergic dogs without natural flea infestation, almost all the time it can be identified some fleas or feces on the dog coat.

The three most frequent allergic dermatitis in dogs, according to Mueller (2002) are: atopic dermatitis (DA), flea allergic dermatitis (FAD) and food hypersensitivity (HA) or an

association of these entities. In our study we used the *Artuvetrin* skin test set, to confirm the etiology of these dermatological problems in dogs. The test results were corroborated with the history's findings and clinical examination and recorded the following prevalence of allergic skin diseases in dog:

29.64 %	atopic dermatitis
62.96 %	atopic dermatitis associate with FAD
3,7 %	flea allergic dermatitis
3,7 %	food hypersensitivity

The correlation between FAD and DA is unclear. More studies related that dogs with diagnosed atopic dermatitis are more predisposed to develop a hypersensitivity to flea than healthy dogs, in *Ctenocephalides spp.* endemic areas. In the same time, dog from flea endemic regions are four times more susceptible to develop atopic dermatitis associated with FAD than just classic flea allergy (Sousa Candance, 2001).

Allergic skin diseases are determined by a recessive gen which can be transmitted hereditary (Foster et al., 2003). Three dogs from the experimental group were in family relationship (a bitch with her two cubs) and had external chronic otitis, positive skin reactions to the dust mites. They also were diagnosed with atopic dermatitis.

Cross reactions to different allergens, most of all between insects like flea and cockroach, are very frequent and can produce error in the diagnosis that is why the skin test results must be correlated with other clinical and para clinical analyses. The two main dust mites, *Dermatophagoides farinae* and *Dermatophagoides pteronyssinus* can be found everywhere (in- and outdoor) but the majority of dogs react with wheal and nodule at the inoculation site to the first one which is more common in Europe.

Concerning the influence of the environment about the sensitization of dogs, there is true: allergic skin diseases had in most of cases a seasonality, pruritus starting with spring (pollenization and insects appearance). The indoor dogs had clinical symptoms all over the year because of the accumulation and persistence of different mites in the carpets s.a.

CONCLUSIONS

The prevalence of allergic skin diseases in the tested dogs were:

29.64 %	atopic dermatitis
62.96 %	atopic dermatitis associate with FAD
3,7 %	flea allergic dermatitis
3,7 %	food hypersensitivity;

The clinically classic form of flea allergic dermatitis it was identified in just 6 cases

The *Artuvetrin* intra dermal skin test is an easy diagnostic test and must be correlated for a final diagnosis with the history's and clinical findings;

The profile of the immediate positive skin reactions was as follow: *Dermatophagoides farinae* (18 cases), followed by the *Ctenocephalides spp.* extract (15 cases), the *Tyrophagus putrescentiae* and *Acarus siro* (3 cases);

The presence of the fleas influences positive the reactivity to the flea extract;

Delayed reaction were noted in just 10 % of the tested group;

There is a correlation between the clinical symptoms, the patient habitat and the test results;

There exist a familial predispositions to develop allergic dermatitis;

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