

Immunotherapy in Atopic Dermatitis in Dogs

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1. Summary

This paper describes a method of performing immunotherapy in the treatment of atopic dermatitis in dogs. It also presents a method sublingual immunosuppression in humans as an alternative to injection. Mechanisms of immunotherapy at the cellular level. Shown are the advantages and disadvantages of immunotherapy. Describes the most important elements in the performance of injection allergens. Given schematic tab helpful in carrying out immunotherapy. Attention is paid to the education of the owner of the animal while driving immunotherapy.

2. Keywords: Alergens; Atopic dermatitis; Cutaneous inflammation; Dog; Sublingual immunotherapy

Allergic diseases as humans as dogs are nowadays one of the more often occurring. These diseases occur more commonly refers to animals but also human. Sometimes, in extreme cases, this cans too severe immediate hypersensitivity reaction lead to anaphylactic shock and death of an individual sensitive. Atopic dermatitis is one of the diseases listed substrates allergic in dogs, humans. The pathogenesis is complex, the base of which there are allergens that in the dog sensitive (but also in humans) is responsible for causing the clinical symptoms of the disease as itching. Itching results in skin damage complicated by pathogens - bacteria, fungi, etc. The pathogenesis of atopic dermatitis is described in the articles previously published by the authors [1-11].

Image scratching the dog is extremely frustrating for the owner and for any price he wants that his pet is not scratched. But the drugs used in the treatment of atopy in dogs not only have many side effects because of their constant use. And it happens that they do not work at all. One method that may be beneficial in the treatment of this disease in dogs is immunotherapy. During the interview, the study detailed the health of a dog is suspected of atopy, performs a test intradermal administration of allergen and observed the resulting erythema. With its intensity is read on what the dog may be allergic. But you have to remember that positive results were observed in healthy dogs. In dogs, atopic dermatitis also is not 100% sure. Gold standard does not exist. The study of IgE levels did not correlate with clinical symptoms of the disease. Immunotherapy is used in a situation where we wish sensitive subject can cause permanent modification of the immune response to an administered allergen. What manifest resignation or decrease the severity of the clinical reaction. Implementation of immunotherapy comprising administering to increasing doses, solutions of allergens at a certain time interval - weekly, monthly, etc. This aims at giving a sensitive body a certain degree of tolerance kind of an allergen / allergens. Clinically, this leads to a reduction or alleviation of allergy symptoms in an individual in contact with the same allergen. Walking also keep in mind that these treatments are not always and not in every case give satisfactory results. It is one of the methods of treatment of atopic dermatitis, to minimize the risk arising from long term use of drugs (steroids).Immune mechanism which accompanies

this process is unclear. The induction of IgG antibodies called. 'Locking' (in particular subclass IgG4). These antibodies react with the allergen from binding of IgE to the allergen or by blocking the IgE production. It was also observed increase in the regulatory T lymphocytes synthesize IL-10 and lower levels of IL-4 that interacted with the treatment of human disease. Similar effects were observed in dogs with atopy. The level of interferon-gamma and IL-4 in dogs with symptoms of atopic dermatitis were treated with immunotherapy was lower as compared to healthy dogs not suffering from atopic dermatitis [12-16].

But studies Dandrieux J, 2008, it was found that the growth rate of setting IgG1 did not correlate with clinical improvement of dogs sick, in the author's opinion there must be other unknown mechanisms which affect immunotherapy. The success of immunotherapy does not depend on age or race, largely depends on the skill of the doctor in the administration of the allergen, and also indirectly from the owner [17].

3. Advantages and Disadvantages of Immunotherapy

3.1. Advantages

- Effective in large breed dogs,
- Reduced cost of treatment,
- Maintenance therapy is less labor intensive than the administration of drugs orally or by injection,
- An increase in IgG1, IgG4 affecting the antigen-specific antibodies that block IgE binding to allergen
- Decrease in the release of inflammatory mediators from cells (m. Al. Mast cells) and by reducing the influx of inflammatory cells to the inflammatory foci.
- Increased expression of the gene for IFN-gamma thus reducing the immune response of lymphocytes derived from a Th2 (which dominate atopy), hung low response is derived from Th1 cells.

3.2. Disadvantages

- Subcutaneous injections,
- Adverse reactions (swelling, anaphylactic shock), etc.,
- Break in administration of doses of allergen cannot be too long (to stick to a particular regimen allergens)

- A long time is necessary administrations of the allergen to be visible effect
- Reactions observed after the administration of allergen / allergen are the basis for the correction applied allergens.

4. Place Administration of Allergens

This may be the area of the cross in the dog's neck. But always keep in mind that the subsequent doses administered allergens were applied to a different location of the body of the dog. in one week the application takes place in the neck and the next will be performed in the area of cross-like. If we do not watch, then at repeated administration of the animal will be felt discomfort in the form of pain, there may be thickening of the skin, swelling, etc. Very important is the detailed; sometimes to a fault education owner during immunotherapy started what to look for when you return from a veterinarian to home. What type of clinical symptoms has to pay special attention. When you experience symptoms such as hives, swelling, vomiting, should immediately contact your doctor. You should not use drugs on their own. Anaphylaxis reaction is rarely observed (this is the most dangerous complication from immunotherapy). During her speech, to save the patient's life at risk given methylprednisolone, epinephrine and diphenhydramine hydrochloride in the relevant therapeutic doses. The owner should be instructed on what scale is observable by him at the level of itching owned a dog (on a scale from 0 to 10), this information should be recorded in the diary immunotherapy. This will allow for a possible adjustment of administered solutions allergens. If we observe, in the dog with whom we use immunotherapy, adverse reactions are to be in the next period of administration of allergen given a dose that does not cause these symptoms, do this and in the next period as well and then try a higher dose. There are many regimens allergens. You could say that it is a combined method - changes in the volume and the amount of allergen solution. Start with a dose of 0.1 ml / hour to the final stage of treatment to increase it to 0.05 ml / day. But this information should be recorded in a diary the use of immunotherapy and systematically corrected. In addition, a dog with atopic dermatitis, in the course of therapy ASIT should be given to special control external parasites (fleas, mites, Cheiletiella sp.), Deworming, control secondary bacterial and fungal infections, apply supplemental diet, as well as baths in special shampoos.

5. Sublingual Immunotherapy (SI)

This is a new method of administration of allergen immunotherapy. This method gave good results in the treatment of allergic humans. Preferred proved to be a grass pollen allergen, a dust mite but insect venom allergens are not suitable for this method. These allergens, insect venoms have to be administered in a conventional manner by injection. The mucous membrane in the mouth, especially in the sublingual space where it is most glycerin in the gel administered allergens. Glycerin facilitate absorption of the allergens. During sublingual administration, a small amount of allergen is taken up by dendritic cells. These cells then migrate to regional lymph nodes, where by interaction with T cells causing their differentiation into regulatory T cells. Only regulatory T cells modulate Th1 and Th2. Th2 is inhibited and increased Th1 response. Also, IL-10 and TGF beta plays a role in this process. There are blocking IgG (IgG4) that the reaction IgE and the allergen is blocked. What brings a beneficial clinical effect. This road seems to be the most secure in susceptible individuals. They can appear like symptoms, swelling of the mouth, itching, which after a few days to resolve spontaneously. This method is also the future of the treatment of various types of food allergies that are observed in humans. Allergies to allergens hazelnut allergens peaches, peanut allergens like. It is important to oral mucosa was not damaged, and you can't do this treatment (administration of the allergen gel) after brushing the teeth must wait several days.

At the moment, this experimental method began to be used in the US, the FDA approved it for use in humans. If given good results in people with allergic diseases are the question arose whether in dogs with atopic dermatitis will work similarly. The first attempts to fall out positively. But its wider use we will have to wait veterinarians. There were developed standardization administration protocols allergens, allergen dose has not been determined. For now, this method in dogs is in the experimental phase. Certainly it will be beneficial as a replacement of classical immunotherapy injection. In a situation when there are adverse reactions in dogs following allergen sensitive. You must also skillfully specify allergens gel into a dog, but in such quantities that they do not swallow too quickly because this leads to decreased stimulation of the immune system in dogs [17].

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