A Retrospective Study of Hyposensitization in Canine Atopy Based on a Polyclonal ELISA test

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ABSTRACT

Compliance with the treatment protocol and the most significant reasons encountered in general practice for the discontinuation of treatment in hyposensitized dogs are examined. The data are based on (1) a review of order forms for the hyposensitization mixture and information sheets for an ELISA test and (2) telephone interviews with dog owners. Most of the owners (81%) gave their dogs allergen injections at home. Non-compliance was defined as discontinuation of treatment in the induction period; 33.9% of the owners became non-compliant. A large proportion of non-compliant owners (51.2%) claimed to be unaware of the length of the induction period. Furthermore, 70.2% of the owners were not aware that treatment would most likely need to be lifelong if it was to remain effective. Although 67.5% of the owners perceived that their dogs had beneficial effects from hyposensitization, only 36.3% of the dogs were receiving maintenance injections at the time of the telephone interview, considerably reducing the long-term benefit from treatment. Canine atopy is a chronic disease characterized by remission and relapses. Since no control group was available in this study, the beneficial outcome of treatment reported by the owners could be partly due to the natural course of the disease. Nevertheless, the results indicated that the long-term effect of hyposensitization in canine atopy will be reduced by premature discontinuation of treatment in the maintenance period. The discontinuation of treatment could be a reflection of the treatment becoming less effective, owing to the development of new hypersensitivities or to a reduction in the placebo effect that may occur in ‘new’ treatments. However, poor client education and follow-up seem to be important reasons for both non-compliance and discontinuation of the treatment in the maintenance period.

Keywords: allergen, atopy, atopic, dermatitis, compliance, dog, hyposensitization, immunoglobulin E, serodiagnosis

Abbreviations: ELISA, enzyme-linked immunosorbent assay; IDT, intradermal test; IgE, immunoglobulin E; PNU, protein nitrogen unit (1 PNU ≡ 10⁻³ mg of nitrogen precipitated with phosphotungstic acid

INTRODUCTION

Atopic dermatitis is considered to be the second most common allergic skin disease in dogs after flea allergy dermatitis (Scott et al., 2001). Management options available in canine atopy are avoidance or elimination of the allergen, symptomatic therapy, or
allergen immunotherapy (hyposensitization). Hyposensitization is the process of decreasing the hypersensitive response of an individual to exposure to an allergen (Scott et al., 1995). It is a commonly accepted treatment for atopy in dogs (Scott et al., 2001), although only one double-blind placebo-controlled trial of its efficacy in dogs has been reported (Willemsen et al., 1984).

No standardized hyposensitization regimen exists in veterinary medicine. Treatment regimens vary in the type of allergens used, the amount of allergens injected and the frequency of injections. Traditionally, intradermal testing (IDT) has been used to select allergens for inclusion in hyposensitization mixtures in canine atopy. Currently, in vitro allergy tests are widely used, although several studies have indicated a high occurrence of false positive test results in both atopic and non-atopic dogs (Miller et al., 1992; Codner and Lessard, 1993; Bond et al., 1994). However, in vitro allergy testing is easy to perform, and treatment recommendations and the allergens for hyposensitization are usually provided by a commercial laboratory (Codner and Lessard, 1992), making hyposensitization of the atopic dog readily available for general practitioners. Most studies evaluating the efficacy of hyposensitization in dogs and factors that might influence the outcome of treatment are nevertheless performed in a referral clinic.

For several years, a polyclonal ELISA test for the detection of allergen-specific IgE antibodies in dogs has been commercially available in Norway. The ELISA test results have frequently been used to identify allergens for hyposensitization. However, this test and the treatment regimen have so far not been independently evaluated. In a preliminary analysis of hyposensitization order forms, we found that most of the hyposensitization mixtures requested were composed of pollens or moulds, or a combination of these allergen groups. However, house dust mites and house dust have, in several studies, been found to be major allergens in canine atopy in Europe (Willemsen and Van den Brom, 1983; Vollset, 1985; Sture et al., 1995; Saridomichelakis et al., 1999). This noticeable discordance from the established pattern of important allergens in canine atopy based on IDT could indicate a lack of diagnostic sensitivity and/or specificity in the ELISA test. Moreover, we found that hyposensitization was discontinued in many dogs in the induction period, as well as in the maintenance period. Since immunotherapy is assumed to be allergen-specific (Reedy et al., 1997a), hyposensitization based on such a test would probably be less effective and lack of improvement could hence be one obvious reason for the discontinuation of treatment in many patients.

Drug compliance in veterinary medicine may be defined as the extent to which owners adhere to instructions when giving prescribed drugs to their animals (Grave and Tanem, 1999). In veterinary medicine, most dogs are given the hyposensitization injections at home, and compliance with the treatment protocol may strongly influence the outcome of the treatment. Additionally, studies in humans have revealed a much higher non-compliance rate in patients who receive their hyposensitization injections in facilities outside the allergist’s office (Tinkelman et al., 1995).

Therefore, a retrospective study was performed of hyposensitization based on the polyclonal ELISA test in dogs diagnosed and managed in general practice. The aims of the study were to determine the compliance with the immunotherapy regimen and to record the most significant reasons for discontinuing the treatment.