**Research Note: Stem Cell Factor & Mast Cell Tumors**

Tyrosine kinase inhibitors (TKIs) work by inhibiting the KIT receptor. Two TKIs (i.e., toceranib phosphate, masitinib mesylate) have been used for treatment of canine mast cell tumors (MCTs), achieving ~50% response in trials. Because of their mechanism of action, KIT activation should be necessary in tumors sensitive to these drugs; however, KIT mutations have been reported in ≤20% of MCTs, including those in trials. Mutation-independent KIT activation must therefore occur in at least some MCTs. Stem cell factor (SCF) is an important ligand for the KIT receptor that promotes mast cell migration, proliferation, and survival. SCF has been shown to stimulate mast cell tumorigenesis in an autocrine or paracrine fashion in vitro.

The purpose of this study was to determine the association of SCF expression with clinical MCTs. SCF was quantified in MCT specimens from canine patients and SCF expression during active cell growth was confirmed. Approximately 40% of cells expressed SCF, as compared with 0% of murine stromal cell controls. Canine MCTs express SCF especially in the growth phase, which may promote mast cell expansion in an autocrine or paracrine fashion, independent of whether a KIT mutation is present. TKIs can thus be rationally used for canine MCTs, even those lacking a KIT mutation. For the ~50% of MCTs unresponsive to TKIs, other unknown mutations or autocrine or paracrine actions of other cytokines may play a role.

**For Allergy Testing, the Art Is in Interpretation**

Allergen-specific immunotherapy (ASIT; injection or drops) is a common treatment modality for canine atopic dermatitis with therapy recommendations based on in vivo (intradermal), in vitro (serum allergen), or a combination testing. Sera from 10 dogs diagnosed with atopic dermatitis were collected; samples were divided into 4 equal aliquots with each aliquot submitted to 1 of 4 commercial laboratories for allergen-specific IgE assay. Although the testing methodology was similar (ELISA), each testing protocol differed with binding of canine IgE in their assays. The overall diagnostic agreement across all dogs and laboratories was slight when corrected for chance. The diagnostic agreement by dog and laboratory pair was also slight for most comparisons. There was slight agreement for plants and fungi, but substantial agreement for mites. Regarding allergen-specific therapy recommendations, the overall agreement between laboratories was slight.

**Global Commentary**

The lack of agreement among the laboratories found in this study was not unexpected. Diagnostic methodologies are not standardized; however, they are not standardized for intradermal skin testing either. Standardization of in vitro and in vivo allergy testing is important as these tests are used worldwide, and the lack of standardization makes it difficult to compare data from global studies. This creates difficulty in making evidence-based medical recommendations.

Of note, this was a small study (n = 10 dogs), and testing a larger group may show different results. What really needs to be evaluated is the response of patients to immunotherapy based on the information provided by these laboratories. However, there is a major caveat: Results from allergy tests (in vitro or in vivo) reflect exposure, and it is the clinician’s responsibility to determine if these are relevant. The only way this can be determined is by asking the client when the dog is itchy and during which season itching is worse. Clients should be reminded that it may take 6–12 months to see maximum benefit; some patients respond better to one form of ASIT; and some patients need their ASIT to be reformulated. The test results are just a tool, and ASIT formulation is the art of practice.—Karen A. Moriello, DVM, DACVD