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Treatment of Lymphoma in Canines

I was distressed when I learned that my friend’s beloved border collie had died of cancer. Anyone who has ever had a dog with cancer knows how painful it is to lose a close companion. Lymphoma, a cancer of immune cells called lymphocytes, is one of the most common types of canine cancers. Lymphoma has no known cause and results in uncontrolled multiplication of lymphocytes and swollen lymph nodes. About twenty-five percent of dogs are diagnosed with cancer, and knowing that the dogs in my life are likely to have lymphoma makes it even clearer that developing better treatments is essential. Currently, there is no cure for lymphoma and only a few standard treatments. Chemotherapy is the most commonly used treatment, but new treatments, like Monoclonal Antibody Therapy and Targeted Biological Therapy, are getting closer to being approved. These new remedies could revolutionize the way we think about and attend to lymphoma in canines.

The most common current treatment is traditional chemotherapy, usually the CHOP protocol, which has been used for many years. This protocol generally includes four drugs taken together: Cyclophosphamide, Doxorubicin (Hydroxydaunomycin), Vincristine (Oncovin®) and Prednisone. This protocol isn’t able to cure lymphoma, but the combination of these drugs has proven to be over 80% effective in achieving temporary remission, which is when there are no detectable cancer cells in the body. A study by Simon D., et. al. found that dogs with B-cell lymphoma tolerate these drugs
well. However, this study also found that chemotherapy has had significantly less success in treating T-cell lymphoma then it has in treating B-cell lymphoma.⁶

Recently, a new treatment for both B-cell and T-cell lymphoma has been developed. This treatment is called Monoclonal Antibody (MAb) Therapy. Monoclonal Antibodies are antibodies that all have the same target, which in this case is a protein on the lymphoma cell. This leads the dog’s own immune system to attack those cells.⁴ MAb Therapy is used with traditional chemotherapy,⁴ and a study by M.S. Czuczman proved it successful in treating human lymphoma.⁷ A similar medicine has been created for dogs, and the canine versions of this treatment are in the process of being approved for everyday use in veterinary offices.⁴ Kevin Choy, an oncologist at Seattle Veterinary Specialists, thinks that MAb Therapy will be one of the major upcoming breakthroughs in treatment of canine lymphoma.⁴

Another future breakthrough for canine lymphoma is Targeted Biological Therapy, such as Tyrosine Kinase Inhibitors. These drugs send a signal that tells tumor cells to stop growing and dividing.⁴ A study by M. Giantin, et. al. showed that lymphoma cells contain Tyrosine Kinase, which is an enzyme these cells use to divide, but that healthy cells don’t contain any Tyrosine Kinase. Giantin’s study suggests that inhibiting Tyrosine Kinase with Targeted Biological Therapy would stop the lymphoma cells from growing.⁸ This treatment would be desirable because it doesn’t kill healthy cells so there are fewer side effects and a happier dog. Targeted Biological Therapy isn’t available for dogs yet, but has successfully treated Chronic Myelogenous Leukemia in humans.⁴ when available, it will be a major advancement in canine lymphoma treatment.
Today, there are very few treatments for one of the most common yet serious canine cancers. Future breakthroughs in treatments like MAb Therapy and Targeted Biological Therapy would increase the quality and length of life for dogs with lymphoma. By helping dogs with cancer live longer, happier, healthier lives, these treatments would also allow the dog’s owners to have more time with their beloved companions. I feel better knowing that even though dogs in my life are likely to have cancer at some point, there are and will be treatments that work well. Continued exploration of new treatments for this grave disease will benefit both dogs with lymphoma and the people who love them.
Reflection Paragraph

This essay has given me a deeper understanding of why doing biomedical research to improve treatments is important. Even if there is already a treatment that successfully achieves temporary remission in cancer, continued research can help greatly improve the life of the patient by discovering more effective and well-tolerated ways of addressing the disease. I knew very little about treating canine lymphoma before I started this project, but when I started learning about it I realized how much scientists have discovered and yet how much more there is to learn. Every day, biomedical research helps advance our understanding of everything from bone fractures to depression medications. Biomedical research is the reason that we and our pets can live healthy, happy lives. Studying this topic made me truly appreciate the hard work that researchers put into understanding medical issues developing treatments that make our lives better in ways that we don’t even realize.
Sources


2. Simons, Rebecca. In-person interview. February 24, 2014


4. Choy, Kevin. Veterinary Oncologist. Email interview. February 17, 2014


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