

Canine Oral Melanoma: How Animal Biomedical Research Helped

Advancements in biomedical research have skyrocketed in the last decade. The public has benefitted immensely as a result of these biomedical innovations, not limited to pets.

Arguably, pets have had much, if not the most benefit from the latest research. As of 2011, laparoscopic procedures, MRIs, ultrasounds, and rDNA technologies have all been put to use in pets, as well as new innovative methods such as detecting microcracks in horse bones (Carrington College 2014). Specifically, however, the field of cancer research has become one of the most innovative and lifesaving fields that has already had an immense impact on society as we know it. Advancements in the treatment of this chronic illness have undoubtedly advanced and evolved over time. As a result, not only has the expansion of biomedical research in this field yielded positive results for humans, but pets as well. In fact a recent study in 2013 on golden retrievers found a link between spays and neuters and development of osteosarcoma and hemangiosarcoma (Hekman 2015). Looking at all of these advancements, however, they can all be linked back to biomedical research through the use of animals/model organisms. And in the spring of 2013, an animal research derived method of treating cancer in dogs came into use when my 10 year old poodle, Kiko, developed oral melanoma.

One of the most common forms of cancer in dogs over 10 years old, it was not a surprise when Kiko developed oral melanoma. Though common, however, canine oral melanoma has been considered to be an extremely malignant tumor with a very high degree of local invasiveness and high metastatic propensity (Bergman 2007). Given the likelihood of the malignancy of Kiko's tumor and classification as a stage II tumor (roughly 3 cm in size), naturally it was excised through a routine surgical procedure. The procedure then followed several treatments of coarse-fractional radiation therapy to prevent metastasis. Within months, Kiko had returned to routine life; all relatively simple, easy, and more or less cost-efficient.

In diving deeper into the situation, however, there was a great deal of animal-based research used into taking such a serious chronic illness and developing a step-by-step SOP to treat it. Most noticeably, the analysis of the disease and effect it has on mammal cell lines. In order to gain a better understanding of the disease and the development of a routine SOP to treat it, lab mice were used. Overwijk and Restifo, professors of melanoma medical oncology, provide research and describe how “the pulmonary metastasis model [within mice] is [a] widely used model for the evaluation of therapy in many tumor models, including B16 melanoma” (2001). Therefore by first being able to analyze metastasis rates and the best approach in attacking this form of cancer in mice, a feasible method was developed for canines and other pets. As well, when a German physics professor, Wilhelm Conrad Roentgen, presented a remarkable lecture entitled “Concerning a New Kind of Ray.” in 1896, the doors towards radiation therapy were opened up. Within years, this form of therapy was already being used to treat cancers all around the world. However, this particular study was also notably credited for its use of model organisms: lab mice. The research conducted help form a plausible method in treating cancer by first analyzing its effects on tumor size, and consequently the ability to shrink cancerous growths (“Evolution of Cancer...” 2014). Therefore, this animal-based research allowed for the implementation of radiation therapy worldwide. Hence it allowed for such a routine procedure to be used in kiko, eradicating any cancerous growths left after the surgery (Animal Cancer Center).

Thus as any treatments, cures, or procedures for any illness are looked at, such as Kiko’s oral melanoma, it can be clearly seen that there are layers upon layers of research which ultimately lead to the development of feasible treatments. The use of model organisms in biomedical research plays an enormous part in the everyday routines that doctors, inpatients, and even outpatients use. They help establish a base knowledge and understanding towards an illness. Moreover, they help researchers analyze methods in combatting the disease that can ultimately be applied back to humans and pets. Just like Kiko’s melanoma, the expansion of

animal-based biomedical research allows for seemingly easy methods to be developed which better the lives of those affected by disease and illness.

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