Study finds neutering-disease link in Golden Retrievers

Posted on March 20, 2013

Photo by R. Scott Nolen

Neutering and the age at which a dog is neutered may affect the animal's risk for developing certain cancers and joint diseases, according to a study published Feb. 13 in the online scientific journal PLOS ONE.

An examination of health records of 759 Golden Retrievers by researchers with the University of California-Davis discovered significantly higher incidents of hip dysplasia, cranial cruciate ligament tears, lymphosarcomas, hemangiosarcomas, and mast cell tumors among neutered dogs, compared with sexually intact dogs.

"The study results indicate that dog owners and service dog trainers should carefully consider when to have their male or female dogs neutered," said the lead investigator, Dr. Benjamin Hart, a distinguished professor emeritus in the UC-Davis School of Veterinary Medicine.

"It is important to remember, however, that because different dog breeds have different vulnerabilities to various diseases, the effects of early and late neutering also may vary from breed to breed," he said.

While results of the study are revealing, Dr. Hart said the relationship between neutering and disease risk is a complex issue. For example, the increased incidence of joint diseases among early-neutered dogs is likely a combination of the effect of neutering on the young dog's growth plates and the increase in body weight that is commonly seen in neutered dogs.

A small body of research has indicated that neutering can have adverse health effects for certain dog breeds. A study of the relationship between life expectancy and ovary removal in Rottweilers found Rottweilers spayed after they were 6 years old were 4.6 times as likely to reach 13 years of age as were Rottweilers spayed at a younger age (*see JAVMA*, **March 1, 2010, page 496**).

Against that backdrop, Dr. Hart and colleagues launched their study, using a single hospital database. The study was designed to examine the effects of neutering on the risks of several diseases in the same breed, distinguishing between males and females and between early or late neutering and not neutering.

Researchers focused on Golden Retrievers because of the breed's popularity and its vulnerability to various cancers and joint disorders. The breed also is favored for work as a service dog.

The research team reviewed the records of female and male Golden Retrievers, ranging in age from 1 to 8 years, that had been examined at UC-Davis' William R. Pritchard Veterinary Medical Teaching Hospital for hip dysplasia, cranial cruciate ligament tear, lymphosarcoma, hemangiosarcoma, and mast cell tumor. The dogs were classified as sexually intact, neutered before 12 months of age, or neutered at 12 months of age or later.

The disease rates for all five diseases were significantly higher in both males and females that were neutered either early or late, compared with that of sexually intact dogs. Specifically, early neutering was associated with an increase in the occurrence of hip dysplasia, cranial cruciate ligament tear, and lymphosarcoma in males and in the occurrence of cranial cruciate ligament tear in females.

Late neutering was associated with the subsequent occurrence of mast cell tumors and hemangiosarcoma in females.

In most areas, the findings of this study were consistent with that of earlier studies, suggesting similar increases in disease risks. The UC-Davis study, however, is the first to specifically report an increased risk of mast cell tumors and hemangiosarcoma with late neutering.

Furthermore, the new study showed a 100 percent increase in the incidence of hip dysplasia among early-neutered males. Earlier studies had reported a 17 percent increase among all neutered dogs, compared with all non-neutered dogs, indicating the importance of the new study in making gender and age-of-neutering comparisons.

The study is available at **http://dx.plos.org/10.1371/journal.pone.0055937**.