

When Cancer Comes With a Pedigree

• By MELINDA BECK



I started writing this column while lying on the floor with a golden retriever who didn't have long to live. All goldens are friendly and eager to please, but Cody was especially affectionate and goofy. He loved to sit on park benches and he seemed to think that everybody he met had nothing better to do than pat him. Most people agreed.

Cody was only seven, middle-aged for the breed, but a fast-moving cancer was filling up his lungs, making it harder and harder for him to breathe.

Cancer is all too common in dogs, especially golden retrievers: 60% of them die of it, more than twice the average rate for all breeds. That includes lymphoma, a cancer of the white blood cells; osteosarcoma, a cancer of the bones, and hemangiosarcoma, a particularly nasty cancer of the cells that line the blood vessels whose first symptom may be sudden death.

"A dog can be literally chasing a ball in the backyard, come in for a drink of water and collapse and be dead within minutes," says Rhonda Hovan, research facilitator for the Golden Retriever Club of America.

While it's tempting to see cancer as the Curse of the Golden Retriever, all breeds have their health scourges. Bulldogs have respiratory problems; dachshunds have back issues; Labrador retrievers have heart disease and diabetes and even with a much lower rate of cancer, die at roughly the same age as goldens.

It's difficult to avoid the hereditary risks, but now that the canine genome has been sequenced, several research projects are under way to try to identify genes that predispose dogs to such issues in the hopes that selective breeding can avoid them. In the meantime, says Ms. Hovan, "The good news is that we think there are a number of lifestyle choices that can reduce the cancer risk."

We bought Cody from a big breeder known in decades past for its champions, and even as a puppy he turned heads. But as handsome as he was, he was dealt a bad genetic hand. He was diagnosed with hip dysplasia at five months and epilepsy at one year. And the genes for actually retrieving things never kicked in. We'd throw a ball to Cody and he'd look quizzically, as if to say, "How about just patting me instead?" It was hard to resist.

Since cancer is found in goldens all over the world, experts theorize that the genetic predisposition goes back to the early founder dogs—in their case, a yellow flat-coated retriever and a now-extinct type of water spaniel—that were bred in the 1860s by a Scottish land baron who was seeking a superior sporting dog. After several generations of refinements, the breed was officially recognized by the U.K.'s Kennel Club in 1911, and the "studbook" was closed, meaning that henceforth, all purebred goldens would be descended from the existing dogs.

All purebred dogs are essentially inbred. And the genes become more concentrated with each generation, because most pet dogs aren't bred and breeders select only a few dogs with the most desirable traits to reproduce.

"It's possible that some trait that we desire in goldens is linked to something that puts them at risk for cancer. We just don't know what it is," says Ms. Hovan, who has also bred goldens in Akron, Ohio, for the past 30 years.

Contrary to rumors in dog-runs and on the Internet, there's no evidence that cancer is more prevalent in any particular line of golden or puppies by popular sires, Mr. Hovan and other experts say. Cancer has been found in "field" goldens with lean faces and dark coats as well as "show" goldens with bigger builds, blocky heads and light coats.

Careful breeding decisions can greatly reduce the risk of other common problems in the breed, including hip and elbow dysplasia, heart and eye problems. But "we have no breeding tools at this time that seem to make any difference in the rate of cancer in goldens," says Ms. Hovan.

"It's the breed that's predisposed to cancer, not any particular line," agrees K. Ann Jeglum, a veterinary oncologist in West Chester, Pa., who has collected pedigrees of more than 4,000 goldens and traced how lymphoma traveled through the generations.

Part of the problem is that cancers usually develop after a dog is beyond her breeding years and may have already produced many puppies, notes Wayne Jensen, chief scientific officer for the Morris Animal Foundation. The non-profit research organization is helping to fund several major projects aiming to find genetic markers that could identify puppies prone to cancer well before they are considered for breeding.

In one such study, co-sponsored by the Golden Retriever Foundation, researchers from three universities plan to collect tissue and blood samples from 150 goldens with lymphoma and 150 goldens with hemangiosarcoma and compare them with blood samples from 300 older goldens who have remained cancer free. Researchers will be looking not only for gene variations that could predispose some dogs to cancer, but also for markers that could allow for early detection and indications of how tumors respond to treatments.

Another research project aims to do for goldens what the Framingham Heart Study has done for heart disease in people—that is, follow 1,000 or so healthy dogs throughout their lives, evaluating genetic, nutritional and environmental risk factors relate to cancer and other diseases.

Are mutts and crossbreeds less prone to cancer? Not necessarily, several experts say. Some studies that have compared purebreds in general to mixed breeds find about a 10% increase in lifespan for comparably sized mixed-breed dogs. But there's no predicting what traits, and health problems, could show up, and no one is keeping statistics.

Last fall, Cody's hip dysplasia was bad enough that he underwent surgery to remove the arthritic, degenerated ball of his hip joint. Theoretically, the muscles and tendons form a false but workable new joint. But instead of returning to the joyful, energetic dog we'd known for seven years, Cody got mysteriously weaker. Three months after the surgery, an X-ray revealed that his lungs were filled with cancer that had metastasized from somewhere, though we never found the origin.

Cody's cancer was too advanced to treat by the time we found it. But some cancers in dogs do respond well to treatment when they are detected early. Surgery, radiation or chemotherapy, alone or in combination, can buy months or years for some dogs.

Last year, the Food and Drug Administration approved the first drug specifically for canine cancer, Palladia, for use with mast cell tumors that occur near the skin. Some of the same chemo drugs used in humans are used in dogs, but side effects are usually milder; veterinary oncologists often aim to give dogs a high quality of life for their remaining time rather than attempt a long-odds cure.

Early warning signs include lumps or masses on or under the skin; which could be signs of mass cell tumors; lethargy, vomiting, diarrhea, changes in breathing or eating habits that could signal lymphoma; lameness or stiffness could indicate osteosarcoma. But hemangiosarcomas have typically metastasized long before they are detected. Ms. Hovan says one of her golden, Pete, who hiked 8,000 miles by her side, died of hemangiosarcoma. "As experienced as I am, I didn't know until 12 hours before she passed away."

While it's impossible to avoid the inherited risk of such cancers, there are steps owners and breeders can take to reduce environmental factors that may contribute.

As much as possible, owners should limit their dog's exposure to second-hand smoke, pesticides and phenoxy herbicides, which have been linked to increased risks of some canine cancers. (But contrary to some rumors, there's no evidence linking flea- and tick-prevention products to elevated cancer risk. One 2008 study even found that goldens treated with the "spot-on" type of such products had significantly fewer lymphomas, though the reasons weren't clear.)

Just as with humans, keeping dogs lean and fit seems to lower their risk of cancer, as well as bone, joint and other health problems. Owners and breeders should be particularly vigilant during the first four months, Ms. Hovan says. Many vets recommend following the "slow-grow" plan, which calls for golden puppies to weigh just 9.5 pounds at eight weeks and 30 pounds at 20 weeks.

There is little evidence to support claims that extremely low-carb diets reduce cancer risks. "It's not the kind of food that matters, it's the amount," she says. But she does recommend giving dogs a half cup of raw cruciferous vegetables—

cauliflower, broccoli, Brussels sprouts and cabbage—approximately three times a week. "Dogs don't generally chew their food, so you have to puree it," she says.

I wish this story had a happier ending. Cody lasted only six weeks after his cancer was diagnosed, and we never found out what kind it was. A needle aspiration of his lungs was inconclusive, and we didn't want to subject him to anything more invasive. Instead, we gave him as much time, and patting, as we could. But it wasn't enough to repay the love he gave us.

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