Old

Cognitive Dysfunction

04 PART FOUR

LIL CASH MH, "Cash", Owned By Robert Dutton
Photo by Legend Photography

Dogs Rule

Adapted from a podcast with Dr. Fred Metzger, DVM

6 PART SERIES

YOUR BEST FRIEND is a little slower on his walks, but he still loves to play. He sleeps more and his joints ache a bit, but he is as happy as he was the day you first met. He has become a little grey in the face, but he never complains. He is a member of an elite crowd and you wouldn't have it any other way because you know ... ***Old Dogs Rule.***

To help celebrate the joy senior dogs bring to our lives, we will be publishing a six-part series "Old Dogs Rule" (compliments of the Canine Health Foundation) which will cover many aspects of caring for senior dogs. We hope you will enjoy!

Cognitive Dysfunction in Senior Dogs

After a lifetime of excited tail wagging, loyal companionship and memorable moments with your dog, you come home from work and your buddy is no longer at the front door to greet you.

Rover's sacked out on his doggy bed snoozing away, while you stand there wondering what has happened. Where did the display of liveliness and affection go that you've come to find irresistible?

Sure, he's getting a little gray around the muzzle, he walks a little slower and last week he wasn't interested in a game of catch. Your dog's changing behavior may be more than simply aging. Pet owners may be unaware of a common condition called cognitive dysfunction syndrome (CDS), similar to Alzheimer's disease in humans.

"Cognitive dysfunction syndrome is related to the aging of the dog's brain," explains Gary Landsberg, DVM, BSc, veterinary behaviorist at North Toronto Animal Clinic in Thornhill, Ontario, Canada. "No one knows the exact cause, but beta-amyloid peptides (protein) are present in the brain, as well as an increase in toxic free radicals and possible circulatory problems that contribute to neurons dying off with signs of aging and dementia."

The brain ages like any other organ in the body, resulting in a deterioration of how your dog thinks, learns and remembers, which in turn alters both your life and your dog's.

If you want to test your own dog for this condition, here's an informal test you can conduct on your own.

"Take a dog, show him two different containers, one orange and one green," says Dr. Landsberg. "Cover them up, put food underneath one of them. The dog must learn which container covers the food. Older dogs and younger dogs can get that pretty much the same. Then if you change it, the older dog doesn't get it."

This experiment highlights the point that older dogs have a harder time competing due to deficits in learning abilities.

There are a number of clinical signs of cognitive dysfunction syndrome that include the following*:

- Altered response to family members
- Disorientation or confusion
- Difficulty navigating the environment, such as climbing stairs
- Sleep changes
- House soiling
- Activity changes
- Excessive panting
- Restlessness, pacing and confusion
- Agitation
- Reduced interest in food
- Excessive drinking and urinating

*** Not all dogs that experience this condition will show all of the above signs.**

You can help your dog with CDS. Routine activities can be calming to dogs with this disease and make them more comfortable at home. Don't rearrange the furniture as that can be upsetting to an older dog.

Get rid of clutter in order to provide wider pathways for your dog that might not be so steady on his feet. Develop a routine schedule for feeding, watering and walking.

If you suspect your geriatric dog might be suffering from CDS, make an appointment with your veterinarian for an examination, along with laboratory tests that include blood and urine, to rule out other possible causes. Any additional tests would only be performed if the veterinarian finds some other problem.

Dean Henricks, DVM, president of the California Veterinary Medical Association in Sacramento, Calif, stresses that while medications and an antioxidant diet can help offset the symptoms of CDS, ultimately there is no cure.

The results of medication and diet are unpredictable. "I have used medication and diet and seen no effect. Then again, I've used the same medications and diet and seen less cognitive deficits," says Dr. Henricks.

"We just finished testing Senilife and Novofit (Sam-e) medications that show improved learning and memory," says Dr. Landsberg. "There is also Selegeline (Anipryl), which has been shown to improve CDS with this drug therapy. These medications are all licensed and tested in laboratories."

If these medications don't work, and your dog is waking up at night, treat the signs and give a sleep aid. It's always a good idea to treat the medical problems, but because they're older dogs, they may also have health issues such as arthritis. Then you need to find new ways to keep them active while treating their arthritis.

In addition to medication, another recommended treatment for dogs experiencing CDS is more physical activity, good food, and more brain enrichment such as food puzzles, games, and agility training. Physical and mental activity keeps the brain active.

Seldom is CDS life threatening in itself, but the disease can affect the bond between dog and owner if your pet is disoriented. You may find that your interaction and you and your dog's quality of life is not what it used to be.

The onset of CDS varies with age. "Not all dogs develop signs of cognitive dysfunction, much as all people don't develop senility," Dr. Landsberg warns. "Some dogs decline as early as six to eight years old, but we may not see clinical signs in a dog until age nine to 11. However, laboratory tests may be able to detect earlier changes."

A veterinarian should see aging dogs without signs of cognitive dysfunction twice a year. Changes can happen quickly and will be seen in a blood study before you will see any outward alterations in behavior.

Be vigilant and let your veterinarian know of any behavior changes, and don't dismiss CDS behavior as simply old age.

Don't tolerate cognitive dysfunction syndrome longer than is necessary. If you think your dog might suffer from cognitive dysfunction syndrome, seek help immediately. If you wait too long before taking your geriatric dog to the veterinarian, he may become incontinent. Don't let that happen to your best animal friend.

Nutrition Can Help Improve the Effect of Cognitive Dysfunction in Older Dogs

Old dogs sleep more than when they were younger. Everyone knows that. But when senior dogs become disoriented in the familiar surroundings of their home or act confused by people who have cared for them their entire lives, it can be unsettling.

Imagine your dog seemingly undergoing a personality change that includes forgetting housetraining skills, being less alert, and having a mixed up sleep-wake pattern. These behavioral changes are attributed to a condition common in older dogs known as cognitive dysfunction syndrome (CDS).

Studies show that 20 to 30 percent of dogs over 7 to 9 years of age show signs of cognitive dysfunction. In dogs over 14 years of age, it increases to 68 percent of dogs.

"Canine aging is known to affect learning and various types of memory," says Karen Overall, V.M.D., Ph.D., DACVB. "In dogs, cognitive dysfunction syndrome is usually diagnosed based on a history of disorientation, alterations to social and interactive behaviors, changes in locomotor behavior and sleep-wake cycles, and loss of housetraining. In the beginning, dogs may have only slightly altered sleep cycles and appear anxious. Social-interactive behaviors may first appear as increased neediness but then change to aloof disengagement."

Understanding the cause of CDS involves examining the cognitive and molecular changes that occur in the brains of aging dogs. "The cumulative burden of oxidative stress over time is the most common topic examined in brain aging," Dr. Overall says.

"It appears to affect all major classes of molecules involved in neurotransmission."

Among the changes that occur are physical atrophy in certain areas of the brain, increases in oxidative damage and decreases in mitochondrial energy metabolism. Free radicals play an important role in aging, and the brain is particularly susceptible to the effect of free radicals because it has a high rate of oxidative metabolism, a high content of lipids, or fats, and a limited ability to regenerate.

Dietary or supplemental antioxidants are known to decrease the damaging effects of free radicals. Some studies have shown improved memory or cognitive performance in dogs fed antioxidant-enriched diets or supplements combined with behavioral enrichment in senior dogs.

DHA (docosahexaenoic acid), a long-chain polyunsaturated omega-3 fatty acid, plays an important role in normal neural functions. Several studies have shown a decrease of DHA in the aging brain. Supplementation with fish oil results in improved neural development and learning ability in young dogs, but more research is needed to learn whether there is a benefit from DHA in canine cognitive disorders.

In addition to potential benefits from antioxidants and long-chain omega-3 fatty acids, alternative brain energy sources may help offset cognitive decline. The brain accounts for only 2 to 3 percent of body weight, but uses 25 percent of the body's glucose. Glucose is believed to be the primary energy source of neurons in the brain and central nervous system, though glucose metabolism becomes less efficient with aging. Thus, alternative sources of energy are needed to support the high-energy requirements of the brain.

Lactate and ketones are alternate energy sources that can easily be used by neural tissue. Medium-chain triglycerides (MCTs) stimulate ketone production, which also crosses the blood-brain barrier and provides an energy source for neural tissue.

"The reduction of brain glucose metabolism is a common feature associated with aging, a process that starts around middle age and may be partially responsible for age-dependent cognitive decline," says Purina Research Scientist Yuanlong Pan, Ph.D., who specializes in studying healthy aging.

In a Purina study, researchers wanted to learn if dietary supplementation with MCTs could improve cognition in aging dogs by providing the brain with ketones as an alternative energy source. Ketone bodies are a natural endogenous energy source mainly produced by the liver from mobilization of endogenous body fat and used by tissues, such as the brain, heart, kidney and muscle.

Older dogs were randomly assigned to two groups based on cognitive tests. They were fed a control diet or a diet containing 5.5 percent MCTs for eight months. During the feeding trial, dogs were tested on their learning ability, memory and attention.

"Dogs fed the MCT diet showed significantly better performance on most of the tests than control dogs," Dr. Pan says. "In summary, this study shows that dietary MCT supplementation can significantly increase blood ketone concentrations and improve cognitive function in old, healthy dogs."

Owners of older dogs can take heart in knowing that diets enriched with alternative brain energy sources, such as MCTs, may help offset their dogs' negative behavioral changes. Combined with providing an interactive environment and activities, you may see a return to the behavior of your dog's younger days. ■