Dog's recovery at Tufts highlights need for genetic testing, owner vigilance

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The remarkable recovery of a dog nursed back to health from the brink of death by Cummings School of Veterinary Medicine at Tufts University highlights the value of a simple genetic test that can help owners determine if their pets are vulnerable to what in most cases is a safe, commonly-used drug.

Bristol, a 4-year-old Australian Shepherd, was brought to the school's Foster Hospital for Small Animals in early Sept., barely responsive and experiencing persistent seizures. Her owner suspected Bristol was suffering from severe ivermectin toxicity, a condition in which ivermectin, the active ingredient in some heartworm prevention medicines, crosses the blood-brain barrier and causes neurological damage.

Bristol required immediate and aggressive care, including the assistance of a mechanical ventilator. She also underwent a brain MRI to rule out other causes of her condition. "It took a great amount of intervention, without which this condition would have been fatal," said Dr. Terri O'Toole, D.V.M., one of a team of critical care specialists overseeing Bristol's care.

Although Bristol began to breathe on her own within 10 days, she remained unconscious for three weeks. Eventually, she began walking with the assistance of a cart and leg splints, and later began walking under her own power with support from hospital staff.

After a month of treatment, Bristol regained her normal personality traits and the ability to walk, eat and drink on her own. "There are not many cases with happy endings like this," said Meghan E. Vaught, D.V.M., who treated Bristol during her 40-day hospital stay. "This is a huge success story."

Tufts treats only one or two cases of ivermectin toxicity each year, and they are most frequently the result of accidents, such as when dogs are exposed to higher-dose ivermectin products intended for horses.

Although products containing ivermectin are typically safe and effective, many white-footed herding breed dogs like Bristol have a genetic mutation that makes them sensitive to it and several other drugs, including some common chemotherapy drugs. O'Toole recommends that owners have their herding breed dogs undergo a simple genetic test to determine if they have a mutation in the multidrug resistance (MDR1) gene.

"Getting the gene mutation test would enable them to know for sure if they could safely use some of these other drugs," said O'Toole. "The kits are readily available through veterinarians, and they include a small brush that you use to take a swab of the inside of the dog's mouth." The swab is sent to a testing lab at Washington State University.

Many herding breed dog owners are aware of the risk and use alternative medicines, as was the case with Bristol's owner. However, Bristol was exposed to ivermectin indirectly. While at a herding lesson, she ingested the feces of sheep that had recently been dewormed with a product containing ivermectin. O'Toole said the case highlights the need for owners to be vigilant when their dogs are in certain settings, such as on farms or in barns, where other animals might have been treated with high concentrations of ivermectin.

Bristol's owner, Laura Liebenow, a Greenfield, Mass., dog trainer who shows dogs, is using her experience to raise awareness among her colleagues and friends about the possibility of dogs developing ivermectin toxicity by exposure to sheep, cow, horse or pig feces.

"I was aware of ivermectin and the fact that herding dogs sometimes ingest feces of farm animals, but I never thought to ask how recently the sheep had been treated with ivermectin," she said. "I hope my experience will be a lesson to others so they can be proactive and avoid a situation similar to Bristol's."

Provided by Tufts University