Animal Science

Fatal disease strikes dogs in Midwest

For the first time, researchers have confirmed cases of canine dysautonomia in the United States, they announced recently. The disorder, which destroys an animal's autonomic nervous system, appeared in 11 dogs, 9 of which lived within a 50-mile radius of Springfield, Mo.

All 11 animals died or were euthanized because of the severity of the illness. An infectious or neurotoxic agent may cause the dysautonomia, report Randall C. Longshore of the University of Missouri-Columbia College of Veterinary Medicine and his colleagues in the May-June JOURNAL OF VETERINARY INTERNAL MEDICINE. They doubt that the disease is contagious.

Animals with the illness have an unusually low density of certain nerves in the autonomic nervous system, says Longshore. They suffer from an array of symptoms, including emaciation, vomiting, difficulty urinating, and dry mucous membranes.

Since the first reported case of canine dysautonomia in England in 1983, veterinarians have diagnosed nine others throughout Europe. The first case of the disorder in the United States was reported in 1991, but researchers never confirmed it. The disease also shows up very occasionally in people, cats, horses, and wild European hares.

The Missouri group's research on the 11 dogs represents the first in-depth study of canine dysautonomia, says Kim Knowles of Tufts University School of Veterinary Medicine in North Grafton, Mass. Whether the disease is actually striking more dogs in the United States or is simply being diagnosed more often remains unclear, Longshore says. At present, no treatment exists.

Dogs shed light on human arrhythmias

Few animal models exist for studying arrhythmia, a common human disorder in which the heart periodically beats irregularly, sometimes resulting in sudden death. So researchers bred a group of German shepherds that is now providing valuable information about the disease, report N. Sydney Moïse and her colleagues at Cornell University's College of Veterinary Medicine in an article accepted for publication in the JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION.

The 270 dogs in Moïse's group were bred to have arrhythmias in the heart's ventricle chambers. A predisposition to arrhythmias occurs almost exclusively in this breed, though the prevalence of the disorder remains unknown. Between 15 and 20 percent of dogs with the disorder die from it as puppies, usually while resting or sleeping, Moïse says. The illness has no known treatment.

Canine arrhythmias resemble fairly serious human cases, although dogs do not develop the dangerous blood clots that people sometimes do. The animals' condition also resembles sudden infant death syndrome, in which seemingly healthy infants die in their sleep.

Because puppies have no symptoms and no health problems other than the arrhythmias, researchers must monitor the animals' heart rates for 24 hours to determine whether they have the disorder. Generally, only puppies with three times the normal rate of roughly 100 beats per minute face a risk of dying from an arrhythmia.

This puppy (center, with heart monitor) died of an arrhythmia.

These dogs have a problem with their autonomic nervous systems, Moïse says. Their hearts lack nerve fibers that help control heart rate and rhythm.

Astronomy

Great wall not so great?

They call it the Great Wall—a thin, curving sheet of galaxies stretching half a billion light-years across the sky (SN: 11/25/89, p. 340). When astronomers map the location of the Great Wall and the Pisces-Perseus chain, these two superclusters together seem to form giant arcs that encircle Earth. The existence of such large-scale clusters and the patterns they form has stymied theorists struggling to explain the evolution of structure in the universe.

Now, researchers suggest that these superclusters don't arrange themselves in a concentric pattern and that individual structures like the Great Wall may consist of a looser grouping of galaxies than they appear to. Theory and observation are closer together than previously thought, says Elizabeth A. Praton of Grinnell College in Grinnell, Iowa.

She notes that astronomers had found evidence of clustering when they mapped galaxies according to the rate at which they are speeding away from Earth. Because the universe is expanding, a galaxy with a higher velocity is considered more distant.

However, this assumption does not always hold true. A distant galaxy's total velocity has two parts—a large component caused by cosmological expansion and a smaller "peculiar velocity" generated, for example, by the tug of neighboring galaxies. Peculiar velocity can either add or subtract from the expansion velocity. Thus, a galaxy with a slightly smaller recession velocity may actually lie farther away than a galaxy with a slightly higher speed.

Praton's computer simulations, which include peculiar velocity, show that the groups of galaxies aligned perpendicular to the line of sight from Earth are not as tightly packed as previously thought. J. Richard Gott of Princeton University says he agrees with the findings. Praton, Adrian L. Melott of the University of Kansas in Lawrence, and Grinnell colleague Margaret McKee presented them June 10 at a meeting of the American Astronomical Society in Madison, Wis.

Second look finds no comet reservoir

Planetary scientists proposed more than 4 decades ago that a vast storehouse of comets exists at the fringes of the solar system. This reservoir, the Kuiper belt, would replenish the supply of short-period comets, many of which shatter or suffer a fatal collision during frequent visits to the inner solar system.

Last year, astronomers using the Hubble Space Telescope reported detecting about 30 comet-sized objects apparently belonging to the Kuiper belt. Previous studies with ground-based telescopes had found objects in the proposed belt that were about 10 times too big to qualify as comets.

Although the Hubble find made front-page headlines, Anita L. Cochran of the University of Texas at Austin and her collaborators emphasized that they had relied on statistical methods to determine that some of the faint, barely detectable blobs in the Hubble images were in the Kuiper belt (SN: 5/13/95, p. 293).

In February, the researchers used Hubble to reexamine the same patch of sky. This time, Cochran says, analysis of the images failed to reveal any distant comets. For unknown reasons, there was more electronic noise in the pictures than before, which might explain why her team came up empty-handed.

Cochran presented the findings on June 8, during a workshop on the Kuiper belt at the University of Toronto's Canadian Institute for Theoretical Astrophysics. The failure to replicate the earlier results "makes the [Kuiper] finding shakier," says comet expert Brian G. Marsden of the Smithsonian Astrophysical Observatory in Cambridge, Mass.

Late this summer, Cochran's team will have 24 hours of additional Hubble time, more than double the amount previously allotted. "[E]ither the results will be convincing . . . or we will have found the error in our ways," says Cochran.