Do Pets Prevent Sudden Death In Children With Epilepsy?

Harold Herzog, Animal Studies Repository
According to the National Weather Service, the average American has a 1 in 10,000 chance of being hit by lightning. These odds, however, are of no condolence to my mother, who was struck by lightning while sitting around a campfire, or my friend Rod Baird who was hit while golfing. (Rod gave up golf; my mother, now 94, was back in her tent after a night in the hospital.)

I thought about the probability of infrequent events when I came across a medical journal article on the effects of pets on a rare medical phenomenon called Sudden Unexplained Death During Epilepsy (SUDEP for short). Some dogs are able to warn people with epilepsy of an impending seizure, and companion animals sometimes have health benefits for their owners. A group of Brazilian researchers wondered if the presence of a pet in the home of a child with epilepsy might reduce their risk of dying from SUDEP. To test their hypothesis, the researchers reviewed the records of patients on a pediatric epilepsy unit in Sao Paulo, Brazil between the years 2000 and 2009.
The Effect of Pets on Sudden Death

Here are the results. Of the 1,092 children in the study, 665 (61%) were from households with pets and 427 (39%) lived in homes with no pets. Over the 10 year period, 11 of the children died for no apparent reason.

Here is kicker: Not a single child living with a companion animal had died. Every child who died of SUDEP lived in a home with NO pets.

I don't know what to make of this study. My intuition is that these results are too good to be true. (“Good” only in the scientific sense; the deaths were tragic.) But intuition doesn’t count in science, so I went for a second opinion. I sent the article to my daughter-in-law Dr. Alendia Hartshorn, a neurologist who works with epileptic patients. She was also skeptical of the results. She pointed me to a recent review article which indicated that a child’s risk of dying from SUDEP is exceedingly low. Alendia says too little is known about the causes of the disorder for doctors to tell parents of children with epilepsy that getting a dog or cat will reduce their child’s risk of sudden death.

Science, Statistics, and Bolts of Lightning

But what could explain these findings? It’s theoretically possible that pets could prevent childhood SUDEP. After all, some epidemiological reports have found that pet owners are healthier than non-pet owners. However, as I have pointed out elsewhere, the results of studies of the effects of pets on human health and happiness have been surprisingly inconsistent.

Another possibility is sloppy science. The SUDEP study was based on a retrospective analysis of hospital records. The authors provided no information about the types of animals in the children’s homes or the number of pets in their households. The article states that information on pet ownership was obtained from relatives of SUDEP patients. Unfortunately, they do not clearly indicate how data on pets in the patients who did not die was obtained. But while the description of their methods is a bit loosey-goosey for my tastes, there is absolutely no reason to believe that the authors jimmied the data.

Finally, the results could have been due to random chance. Not trusting my own statistical abilities, I e-mailed the article to John Wagaman, a colleague who has Ph. D. in statistics. I asked him to estimate the odds of getting this pattern of results by dumb luck. He wrote back the next morning:

Using the hypergeometric distribution, if an urn contained 1092 marbles (427 white, 665 black) and we selected 11 marbles randomly without replacement, the probability of selecting 11 white marbles and 0 black marbles is about .00003. This would be the probability of having all 11 seizure deaths in the no pet group by chance alone.

John is saying the odds of all the unexplained deaths occurring in the no-pet group by chance alone are roughly 3 in 100,000. (I don't have a clue what the hypergeometric distribution is.)
What's It All Mean?

One of my psychology department colleagues was excited when I told her about the research. Her sister Marie has epilepsy. When Marie’s dog (an untrained Lab) senses an oncoming seizure, he will nudge her into the nearest chair. My ex-golfing friend Rod Baird also had some ideas about the research. He correctly pointed out that some studies have found that children raised with pets are less prone to allergies and respiratory infections. Rod suggested that the SUDEP deaths in the non-pet group might be associated with allergic reactions.

I find this study both fascinating and unnerving. It was published in Seizure, a well-regarded medical journal. Yet it is difficult for me to believe that living with a pet would completely eliminate sudden deaths in children with epilepsy. On the other hand, obtaining these results just by chance is less likely than being struck by lightning.

So for me, the extraordinary effects of pets on Sudden Unexplained Death During Epilepsy are still, well...unexplained.