

# Researchers dig for cause of dog diabetes

September 17 2015, by Serena Gordon, Healthday Reporter

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Disease looks similar to type 1 in humans, but with important differences.

(HealthDay)—Like many other animals, man's best friend isn't immune to developing diabetes. But new research suggests that while the disease in dogs looks similar to type 1 diabetes in people, there are some significant differences between man and beast.

"Dogs get [diabetes](#) at a pretty significant rate, about the same rate that humans get type 1 diabetes. But, they get it later in life," explained study senior author Dr. Jake Kushner, chief of pediatric diabetes and endocrinology at Baylor College of Medicine in Houston.

Using state-of-the-art imaging techniques, the researchers were able to look at pancreas tissue from 23 dogs with diabetes and 17 dogs without the disease. The pancreas is an organ that contains cells called [islet cells](#). Those cells contain [beta cells](#) that produce the hormone insulin, which is

necessary for turning the sugars in foods into fuel for the body.

Like humans with type 1 diabetes, dogs develop diabetes after a dramatic loss of beta cells. Without a significant number of beta cells, the pancreas is unable to produce enough insulin. That insulin must be replaced through injections.

But the researchers found some key differences when they dug deeper.

"There were some real surprises," said Kushner. "Dogs had very few islets. In man and mouse, there are often residual islets, but these dogs had very little left. It suggests some sort of really aggressive process destroying those cells."

However, the researchers didn't find evidence of inflammation or an autoimmune attack on the islet cells, as happens with humans. Kushner said it's possible they were looking too late in the course of the disease to see the [autoimmune attack](#), and that this remains an open research question.

The study authors also found a big difference in the makeup of the islet cells. In humans without diabetes, beta cells make up slightly more than 50 percent of the islet cells. In healthy dogs, the researchers found that islet cells were made up of about 80 percent beta cells.

This finding could explain why dogs develop diabetes at such an older age. "If they're starting with a larger supply of beta cells, it may give them a longer time before they develop the disease," explained study author Dr. Rebecca Hess, a veterinarian and chief of internal medicine at the School of Veterinary Medicine at the University of Pennsylvania in Philadelphia.

The study also found that "the architecture of the islets in dogs was more

similar to [human](#) islets, in sharp contrast to rats and mice," Hess said. In dogs, beta cells are spread throughout the islets as in humans. In rodents, beta cells are concentrated in the center of the islets, according to the researchers. This finding suggests that dogs might be a better animal model for [type 1 diabetes](#) than rodents, the authors added.

Dr. Joel Zonszein is director of the clinical diabetes center at Montefiore Medical Center in New York City. He said, "Although diabetes in the dog resembles type 1 in humans, they don't have the same inflammatory process we see in type 1 in humans. In dogs, we don't understand what triggers it yet. And, the anatomy of the [islets](#) is completely different in dogs," he explained.

"This is a nice study, but we still have to learn more," Zonszein added.

The findings were published online recently in the journal *PLOS One*. The research team was led by Emily Shields, who is currently a graduate student at the University of Pennsylvania's Perelman School of Medicine.

While this study won't lead to changes in the management of diabetes in dogs for now, it does offer new information and directions for future research, the authors pointed out.

So, where does this leave dog owners? Certain breeds have a higher risk of diabetes, including Samoyeds, Miniature Schnauzers, Miniature and Toy Poodles, Pugs and Australian Terriers, Hess said.

Unfortunately, there aren't currently any reliable ways to prevent diabetes in dogs. But Hess advised dog owners to be on the lookout for the signs and symptoms of diabetes, particularly if you have an older dog.

As in humans, the primary signs of diabetes are increased thirst and urination. "Dogs with diabetes may need to be let out more frequently than usual, or they may have accidents in the house," Hess said.

She suggested that an accident in the house in a formerly well house-trained dog warrants a visit to the vet to make sure nothing's wrong, and that's especially true if the dog has also lost weight recently without being put on a diet.

The good news is that it's easy for the vet to diagnose, and it's "very treatable" with insulin injections, Hess said. She also pointed out that [dogs](#) don't seem susceptible to the same types of complications from diabetes that humans are.

"Dogs can live quite well with diabetes," she said.

**More information:** To learn more about diabetes in dogs, visit the [ASPCA](#).

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Citation: Researchers dig for cause of dog diabetes (2015, September 17) retrieved 27 April 2024 from <https://medicalxpress.com/news/2015-09-dog-diabetes.html>

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