Diabetes Mellitus in Cats: Causes & Characteristics

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Diabetes mellitus is a very complicated and fairly common disease of older cats. It is estimated to occur in approximately 1 of every 400 cats. Diabetes mellitus is sometimes referred to as "sugar diabetes" because of the abnormal level of sugar in the bloodstream of animals with the disease.

How does diabetes mellitus occur?

In the pancreas, certain cells called "beta cells" normally produce insulin. The amount of insulin produced is determined by the level of glucose (sugar) in the blood. A small area of the brain called the hypothalamus is responsible for glucose regulation and appetite. Insulin is necessary for glucose to enter the cells of the body, including the cells of the hypothalamus. Normally, when the glucose level is high (such as after a meal), insulin is released, which allows more glucose to enter the cells of the hypothalamus; they in turn respond by decreasing the feeling of hunger. As the blood glucose level decreases and the cells of the hypothalamus have less sugar available, the hypothalamus signals the body to feel hunger again.

Diabetes mellitus results from either an insufficient amount of insulin being released from the pancreas, or an abnormal release of insulin in conjunction with an inadequate response of the body's cells to the action of insulin. In either case, glucose in the blood cannot enter the cells of the body. In diabetes, even though the glucose level in the blood may be high, the cells of the hypothalamus are not receiving any glucose. The cells of the hypothalamus, then, continue to signal the body that it is hungry. So the cat eats more, but again, the glucose cannot enter the cells and it builds up in the bloodstream, sometimes to a dangerous level. Even though the cat may eat more and more, the glucose cannot be used by the body and the cat can lose weight.

Damage to the beta cells may occur as a result of a proteinaceous substance called amyloid being deposited in and around the cells. The amyloid around the cells can block the cells from a proper blood supply and amyloid in the cells can impair their function and even cause death of the cells. Continued research on the role amyloid plays in the development of diabetes mellitus in cats will hopefully provide us with important information regarding predicting, preventing, and treating diabetes in cats.

Which cats are more likely to develop diabetes mellitus?

The exact cause of diabetes mellitus is unknown, but we do know it is more common in middle-age obese cats. Males are almost twice as likely to develop diabetes mellitus as females. Prior disease of the pancreas, genetics, hormone imbalances, infections, and some medications may also play a role.

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