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99 Down, 1 to Go
in tissue though insulin cannot act normally at these sites. The dog becomes hyperglycemic and in many cases the body responds by producing more insulin. This is reflected by increased insulin levels in the blood. The dog is diabetic because insulin is not being used properly by the tissues. This condition is reversible provided no major damage has occurred to pancreatic cells producing insulin.

A number of dogs studied recovered spontaneously from diabetes when the progesterone levels dropped at the end of estrus or when the dog was spayed. This was accompanied by a drop in the growth hormone level. Otherwise, discovered when the injections of MPA ceased. They too showed a decrease in the levels of progesterone and growth hormone. "Female dogs produce equally high amounts of progesterone during estrus whether pregnant or not; also, reproductive cycles in dogs do not cease as the animal ages. It could be possible that the lifelong exposure to these high progesterone levels in some animals eventually evokes growth hormone elevation. The mechanism by which this occurs is not known, however. Ovarian hypertrophy was reported, the progesterone and growth hormone levels dropped to normal." Dr. Eigenmann explained that for elderly diabetic female dogs an ovarian hypertrophy is indicated. He recommends treating most of these dogs with insulin in order to prevent further damage to the pancreas. "In many cases, shortly after surgery, the animal returns to normal and the diabetes is gone."

This type of diabetes is likely to be seen more frequently in Europe where female dogs are rarely spayed. Instead they may be given annual injections of MPA to prevent estrus. This may be continued throughout the dog's life unless she is bred.

Another condition associated with progesterone/progestrone-evoked growth hormone overproduction is acromegaly. In this condition the animal shows sudden increase in soft tissue growth, particularly in the head and neck area, a distended abdomen and excessive skin folds. This is found in dogs treated with MPA to prevent estrus. They are allowed to cycle normally. Acromegaly can be life threatening as the extra tissue in the throat interferes with normal breathing.

Also in this disorder the level of growth hormone was found to be elevated. The animals recovered completely after an ovarian cystectomy and/or progesterone withdrawal. The tissue shrank, the excessive skin folds disappeared and the swelling of the abdomen ceased. "Acromegaly in the dog caused by progesterone-evoked growth hormone overproduction may provide a model for the study of the regulation of growth factors," explained Dr. Eigenmann. "It is an exciting possibility."

Growth hormone-related diabetes has also been found in a cat. Dr. Eigenmann has a diabetic cat which has diabetes and elevated growth hormone levels. Tests showed that the animal has a pituitary tumor which causes an excessive production of growth hormone. "Growth hormone overproduction could be the cause of diabetes in a larger number of cats," he said. "Further study must be made, though, to determine if diabetes in cats is not as frequent as it is in the dog."

While the overproduction of growth hormone causes problems so does the underproduction of the substance. In dogs a form of dwarfism caused by low levels of growth hormone occurs. Dwarfism is a disease in which a genetically determined growth potential is not reached. In order to grow the body must produce growth hormone in order to develop normally.