# Pancreatitis in Diabetic Cats

Diabetes mellitus (DM) is a common endocrinopathy of cats. Pancreatitis can be a complicating factor, but studies on the association have yielded mixed results. Diagnosing feline pancreatitis can be difficult, especially in subclinical cases. Use of the serum markers feline pancreatic lipase immunoreactivity (fPLI) or feline pancreas-specific lipase (Spec fPL) combined with abdominal ultrasonography is most useful. An additional diagnostic serum marker, 1, 2-o-dilauryl-rac-glycero-3-glutaric acid-(6'-methylresorufin) ester (DGGR)lipase, has recently been shown to correlate well with Spec fPL concentration.

In this study, 30 cats newly diagnosed with DM underwent abdominal ultrasonography and had serum Spec fPL and DGGR-lipase activities measured at admission, then 2 and 6 months postdiagnosis. All cats were treated with insulin glargine and fed a highprotein, low-carbohydrate diet. At diagnosis, subclinical pancreatitis was suspected in 33%, 50%, and 31% of cats based on Spec fPL, DGGR-lipase, and ultrasound, respectively. When diagnostic criteria were combined, 60% of cats were diagnosed with subclinical pancreatitis. Most suspected subclinical pancreatitis cats did not demonstrate clinically relevant signs at diagnosis or during follow-up. Serum concentrations of Spec fPL and DGGR-lipase remained high in ≈80% and 86.7%, respectively, of cats with suspected pancreatitis; abnormal ultrasonography findings endured in 44.4%. Seventeen of 30 cats achieved diabetic remission: these had significantly lower Spec fPL at the 2-month follow-up. Although there was a trend toward cats with abnormal pancreatic tests being less likely to achieve remission, the results did not reach significance.

### Commentary

Based on necropsy studies, histopathologic evidence of pancreatitis is common in cats. Although the authors presented interesting findings, this study may not change how some clinicians would approach diabetic management in a cat. The principles of achieving diabetic remission remain appropriate diet, good glycemic control, and addressing underlying clinical disease. Clinically, there is not a way to influence pancreatitis resolution. Until that occurs, this information is interesting, and it may influence discussions with clients on achieving diabetic remission; ultimately, though, it does not change treatment, and further research is needed.—Natashia Evans, BVSc (Hons), BSc (Vet), MACVSc (Small Animal Medicine)

### Source

Zini E, Hafner M, Kook P, Lutz TA, Ohlerth S, Reusch CE. Longitudinal evaluation of serum pancreatic enzymes and ultrasonographic findings in diabetic cats without clinically relevant pancreatitis at diagnosis. J Vet Intern Med. 2015;29(2):589-596.

## Diagnosing feline pancreatitis can be difficult, especially in subclinical cases.

# Research Note: **P-glycoprotein**

The blood-brain barrier maintains brain homeostasis and protects the brain from toxic substances in peripheral circulation. P-glycoprotein (P-gp), which is highly expressed on brain endothelial cells and blocks entry of most drugs to the brain, is the most widely known and studied drug-efflux transporter at the blood-brain barrier and was the first multidrug-resistant human transporter identified. P-gp inhibitors are being studied as a possible mechanism to overcome multidrug resistance treating multiple human diseases.

The authors previously demonstrated that activation of A2A adenosine receptor (AR) signaling increases drug accumulation in the brain and sought to determine if A2A AR signaling exerts its effects by way of P-gp modulation. The authors used 2 A2A AR agonists and measured P-gp expression and function. They found that both A2A AR agonists downmodulated expression of P-gp. Additionally, one of the A2A AR agonists increased accumulation of epirubicin, a chemotherapeutic drug and P-gp substrate, in mouse brains. The other A2A AR agonist caused a similar effect on the accumulation of epirubicin but at later time points. P-gp was found to be downmodulated through multiple mechanisms.

The authors concluded that A2A AR activation increases the transcellular pathway mediated by P-gp and may represent a means of delivering drugs into the CNS.

#### Source

Kim D-G, Bynoe MS. A2A adenosine receptor modulates drug efflux transporter P-glycoprotein at the blood-brain barrier. *J Clin Invest*. 2016;126(5): 1717-1733.