**BIOMEDICAL & VETERINARY SCIENCES**

**GRADUATE PROGRAM**

**ANNOUNCES**

The Master of Science Seminar and Examination of

**Jessica A. Villm**

**“Effects of hyperlipidemia on gallbladder motility in dogs”**

**Monday, April 5th, 2021**

**9:00 AM**

**220 Vet Med Phase 2**

**Zoom link:** <https://virginiatech.zoom.us/j/3874703260?pwd=N2w2MWhubUdPT0hxMXhVb0wzYjQvZz09>

**Bio**



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Jessica is a 3rd year medicine resident. She previously attended Washington State University where she received her DVM degree. Before obtaining her DVM, Jessica attended Oklahoma State University where she received her Bachelor of Arts degree in Music Performance. She recently received the College of Veterinary Medicine’s nomination for 2020 Outstanding Masters Student.

**Funded by**

AKC Canine Health Foundation

VMCVM Office of Research and Graduate Studies

**Lay Language Abstract**

The pathogenesis of gallbladder mucoceles is unknown in the dog. It has been proposed that hyperlipidemia could impair gallbladder motility and contribute to gallbladder mucocele formation.

The objective of this study was to compare gallbladder motility in dogs with hyperlipidemia to healthy, control dogs using ultrasonography.  We hypothesized that hyperlipidemic dogs will have decreased gallbladder motility, specifically increased fasting gallbladder volume (GBV) and decreased gallbladder ejection fractions at 60 (EF60) and 120 (EF120) minutes compared to controls.

Twenty-six hyperlipidemic and 28 healthy, age-matched control dogs were prospectively enrolled. Hyperlipidemia was defined as hypercholesterolemia (>332 mg/dL) and/or hypertriglyceridemia (>143 mg/dL). Ultrasound was performed on dogs in the fasted state as well as 60 and 120 minutes after being fed 10g/kg of Hills a/d. GBVs and EFs were calculated using the following formulas: GBV = (0.52 x L x W x H)/kg and EF = ((GBV0-GBV60,120)/GBV0) x 100, respectively. Normal gallbladder motility was defined as EF > 25%.  GBV0, GBV60, GBV120, EF60 and EF120 were compared between dogs with hyperlipidemia and controls using the Wilcoxon rank sum test. Statistical significance was set to p<0.05.

Hypercholesterolemia and hypertriglyceridemia were present in 15/26 and 21/26 hyperlipidemic dogs respectively, and 10/26 had elevations in both values. Eleven (42%) hyperlipidemic dogs were deemed severely hyperlipidemic if either triglyceride, cholesterol, or both concentrations were >500 mg/dL.

There were significant differences in GBV0 and GBV60 between hyperlipidemia and control dogs. Dogs with severe hyperlipidemia had significantly larger GBVs (0,60,120). Dogs with hypercholesterolemia also had significantly greater GBVs at all times compared to dogs without hypercholesterolemia.  Median EF60 and EF120 were not significantly different between hyperlipidemic dogs and control dogs nor severely hyperlipidemic dogs and non-severely hyperlipidemic dogs. EF120 was <25% in 9 (35%) and 8 (29%) of hyperlipidemic and control dogs, respectively.

Hyperlipidemic dogs have significantly greater fasting and postprandial GBVs than control dogs but similar ejection fractions. Gallbladder contractility is unaltered in hyperlipidemic dogs, but gallbladder volume remains higher in hyperlipidemic dogs even after feeding.  This distention could contribute to retention of bile and gallbladder disease.

**Presentations**

"Gallbladder Motility in Dogs with Hyperlipidemia" -31st Annual Graduate Research Symposium Oral presentation

“Hyperlipidemia and Gallbladder Mucocele Formation in Dogs” – Intern-Resident Seminar

“Gallbladder Sludge in Cats” – Intern-Resident Seminar

**Awards and Academic Achievements**

2020 Outstanding Masters student

Canine Health Foundation

**Examination Graduate Committee**

**Major Advisor/Chair:**

Stefanie DeMonaco, DVM, MS, Diplomate ACVIM

Assistant Professor

Internal Medicine

Department of Small Animal Clinical Sciences

**Graduate Advising Committee Members:**

Timothy Bolton, DVM, Diplomate ACVIM

Assistant Professor

Internal Medicine

Department of Small Animal Clinical Sciences

David Panciera, DVM, MS, Diplomate ACVIM

Anne Hunter Professor of Veterinary Medicine

Internal Medicine

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Martha Larson, DVM, MS, Diplomate ACVR

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Radiology

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