



Utah Veterinary Diagnostic Laboratory

Main Lab
950 East 1400 North ~ P.O. Box 6338
Logan, Utah 84341
Phone: (435) 797-1895
Fax: (435) 797-2805
Website: <http://www.usu.edu/uvdl>

Final Report

Accession No. 14-L5959

Date Received: 10/07/14

Date Reported: 10/23/14

Client: Division of Water Quality
195 North 1950 West
P.O. Box 144870
Salt Lake City UT 84114
Referring Vet:

Owner Name: Division of Water Quality
Animal ID: Drake

Species: Canine
Breed: Labrador Retriever

Phone: (801) 536-4320
Fax:

Sex:
Age:

Case Conclusion

Assay: **Summary**

Pathologist Tom Baldwin

Morphologic diagnoses

1. Right ventricular hypertrophy and pulmonic valve dilation
2. Interlobular septal hemorrhages; pancreas
3. Splenic contraction
4. Congestion, moderate, acute; small intestine, liver, lung and kidney
5. Patchy pulmonary edema

Gross and histopathologic examination of body organs/tissues indicates acute cardiovascular collapse (shock), but not a definitive cause. Cardiac arrhythmia secondary to right ventricular hypertrophy from pulmonic valve dilation is suspected, but cardiac arrhythmia cannot be identified postmortem (requires antemortem testing). Only one of three heart measurement ratios used to indicate right ventricular hypertrophy is elevated, but overall gross cardiac changes argue that hypertrophy is indeed present. Moreover, the ratio of aortic to pulmonic valve circumferences is consistent with pulmonic valve dilation. Pulmonic valve dilation results in valvular leakage with volume overload to the right ventricle, which over time produces compensatory hypertrophy. Pulmonic valve dilation can be a congenital malformation or secondary to pulmonary hypertension or valvular infections (not identified here). Given the age of this animal, a congenital anomaly is likely. Other causes (among many) of acute cardiovascular collapse include a variety of toxicants (botulism, blue-green algae, carbamates, cyanide, nitrites/nitrates, organophosphates, strychnine, water hemlock, etc.), electric, anaphylactic or other forms of shock and grand mal epileptic or other seizures. Blue-green algae is not identified in gastric contents and Anatoxin-a and microcystin toxins are not identified chemically, making blue-green algae toxicity highly unlikely.

Pathology

Assay: **Necropsy Companion Animal**

Pathologist Tom Baldwin

Gross Findings: A 39.4 kg (86.8 lb), adult, neutered male, black Labrador retriever in good body and fair postmortem (submitted frozen) condition is necropsied on 9/7/2014. The stomach contains a moderate amount of brown kibble. Lung lobes are red and ooze fluid when incised (pulmonary edema). Multiple hemorrhages widen septa separating pancreatic lobules. The right ventricle is enlarged, imparting a double

apex to the heart (photograph). Heart measurements are:

Right atrioventricular valve circumference (RAV) = 12.4 cm

Left atrioventricular valve circumference (LAV) = 10.3 cm

Pulmonic valve circumference (PV) = 7.5 cm

Aortic valve circumference (AV) = 6.0 cm

Total cardiac weight (TCW) = 235.2 g

Left ventricle plus septum weight (LV+S) = 156.4 g

Right ventricle weight (RV) = 50.0 g

Significant ratios are:

LV+S/TC = 66.5%; values = 66.25% are two or more standard deviations above normal.

RV/TC = 21.26%; values = to 20.94% are two or more standard deviations above normal.

AV/PV = 0.80; values = 0.81 indicate either aortic valve stenosis or pulmonic valve dilation.

As the right heart is enlarged grossly, right ventricular hypertrophy secondary to pulmonic valve dilation is suspected.

No other significant gross abnormalities are noted.

Histopathologic Findings: Significant histopathologic findings are provided as morphologic diagnoses in the above 'Summary' section. No significant histopathologic abnormalities are noted in sections of tongue, esophagus, stomach, large intestine, trachea, left and right ventricular myocardium, skeletal muscle, lymph node, adrenal gland, thyroid and brain.

Outside Laboratory

Assay: **Outside Laboratory**

Pathologist Tom Baldwin

The stomach content was analyzed by the California Animal Health and Food Safety Laboratory, a certified and accredited testing laboratory. The stomach content was analyzed for blue green algae toxins Anatoxin-a, as well as Microcystins LA, LR, RR, and YR. Each of these have a reporting limit of 10 parts per billion.

None of these blue green algae toxins were identified in the submitted stomach content.

Prior to shipment to California for analyses, a sample of the stomach content was also prepared and viewed under a microscope by Dr. Jeffery Hall. No algae was visually identified in the stomach content viewed under the microscope.

Lack of visual algae identification, as well as the lack of chemical identification of the blue green algae toxins (Anatoxin-a and microcystins) in the stomach content serve to rule these out as a cause of death in this dog.

Reports received via email may not be secure. Unauthorized individuals may be able to access reports. If you are not the intended recipient, please promptly delete this email and notify the sender.

14L5959



Heart: The right ventricle is dilated, creating a double apex

End of Report