Lessons learned from the 2018 Microcystin poisoning of dogs in Stuart, FL

Dr. Nancy Mettee, Emergency Veterinarian
Population 160,000

Median age 51.6 years

Median home value $233K

More than 77 parks

“The most bio diverse lagoon ecosystem in the Northern hemisphere”
The trouble is...

- Historically, the St. Lucie river was freshwater with no connection to Lake Okeechobee or the Atlantic Ocean.
- In the late 19th century a series of modifications was undertaken for flood control, navigation, and water supply purposes.
- Intermittent discharge from Lake Okeechobee has a negative impact on water quality throughout the basin.
CDC alert had been issued

- Alert posted on FloridaHealth.gov website in April 2018

- Despite alerts pet owners continued to allow access to contaminated water

- Despite alerts humans continued to swim and fish in contaminated water

- This alert was not communicated to Florida veterinarians or specifically those practicing in Martin County
Then it got very, very hot

- Seven cases of acute liver failure in dogs presented to Pet Emergency of Martin County: 8/26, 8/27, 9/1, 9/3, 9/4, 9/8, 9/8. By the third case a syndrome was identified.

- All patients had access to the St Lucie River at some point before becoming ill.
Common symptoms

- Low blood sugar
- Vomiting
- Elevated liver values on blood work
- Low platelet count
- Extensive bleeding (coagulopathy)
- Shock
- Abdominal pain
- Dark, tarry diarrhea
Suspect HAB, what is next?

- Only available testing to confirm Microcystin in patients is in liver biopsy (cost per sample $200.00).

- No established local resource to collect data from surrounding veterinary practices. (how many other cases???).

- ASPCA toxicologists report 99% mortality with Microcystin toxicosis.

- Media involvement by September 9 2018.
Differential diagnosis:

- rodenticide
- mushroom toxin
- aflatoxin
- xylitol toxicity
- other liver toxin
- Leptospirosis infection

URGENT UPDATE

September 09, 2018

Pet Emergency of Martin County is currently working with the Martin County Sheriff’s Dept. and the Martin County Dept. of Health to investigate seven cases of acute hepatopathy in dogs in the last 2 weeks. The timeline of onset varies, but in the most severely affected vomiting begins within 6 hours of exposure. No etiologic agent has yet been identified. However, blue green algae, aflatoxin, ricin, and Amanita mushroom toxicity are potential causes.

Samples of tissues and fluids, and gastric contents have been sent out to various laboratories for histology and microcystin toxin testing.

Patients have all had access to the St. Lucie River.

Regardless of the inciting cause the cases have several notable similarities including: acute vomiting, severe elevation in ALT, critically low platelet count, coagulopathy, and abdominal effusion.

Several but not all cases have also had hypoglycemia, ventricular tachycardia, pleural effusion, melena, and collapse.

At this time no etiologic agent has been identified but treatment for acute hepatopathy including: acetylcysteine, dextrone support, gastroprotectants, cholestyramine, and transfusion of fresh frozen plasma has been successful in most cases.

We will share information as available. If you have a suspect case please call Sgt. Pat Coloussano of the Martin County Sheriff’s Dept. at 772-240-7900.
The single mortality allowed extensive testing

- Admitted 9/4/2018 to Pet Emergency of Martin County
- 9 year old Male neutered Standard Poodle, Finn
- Escaped from yard and returned wet 2 hours later
- Acute vomiting, diarrhea, and weakness developed within 2 hours
- Died within 12 hours of exposure
- Owners graciously agreed to full autopsy with lab testing
- Pet Emergency of Martin County paid for both
Samples collected

- Formalin-fixed tissues
- Aseptically collected and frozen:
  - Liver
  - Kidney
  - Spleen
  - Lung
  - Gastric contents
  - Small and large intestine
  - Urine
  - Bile
  - Heart blood
  - Frontal lobe of brain

All formalin-fixed tissues <1cm³
Back at the clinic

- Aggressive treatment for acute liver failure
- Treatment for shock, hypoglycemia, vomiting, diarrhea, GI ulceration, heart issues, excessive bleeding, abdominal pain
- Success with only one of seven dogs dying, but average cost of treatment was $3,000.00
Government Resources contacted:

- Florida Department of Environmental Protection
- Florida Department of Agriculture
- Florida Association of Veterinarians
- Florida State Veterinarian
- Martin County Department of Health
- CDC Harmful Algal Bloom Reporting System
Contacts that were actually helpful

- Dr. Brandi Gallagher, local veterinary internal medicine specialist
- Dr. Susan Fogelson, local veterinary pathologist
- Martin County Sheriff’s department, especially Sgt. Pat Collusano
- Treasure Coast Veterinary Medical Association
- Local water testing laboratory: Green water, established testing in urine, fur, and vomit with publication pending
- ASPCA poison control toxicology, BTW, treatment recommendations have been updated
• Provided by Martin County Emergency Management

• “Reverse 911”

• All listed phone numbers in Martin County were called with recorded warning

• First use for the HAB on September 19, 2018

• Last case presented September 19, 2018
Recommendations:

• Coordinate local health professionals DVMs and MDs for centralized reporting suspect events. How many cases were not identified?

• Create funding source for testing to confirm diagnosis. Owners face huge medical bills already.

• Utilize local emergency alert systems once toxin is confirmed

• Have plan for media interaction