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### Did you know?

The **Animal Emergency & Referral Center of West Houston** is now open 24-hours a day for Emergency and Critical Care! Please call before referring.

## Pancreatitis

By Victoria Kuzara, DVM

Acute onset of non-specific gastrointestinal signs is one of the most common presenting complaints seen by all veterinarians (both general practice and emergency medicine alike). Acute pancreatitis (AP) is often an important differential for these cases. AP warrants in depth client communication, as well as specific diagnostics and treatments to be started on an emergency basis.

AP is an inflammatory condition that can be mild and self-limiting in most cases, but can also lead to severe life-threatening complications. Therefore, early identification of at risk patients is essential. Risk factors include history of previous pancreatitis, abdominal trauma, dietary indiscretion, breed predispositions (Miniature Schnauzer, Yorkshire

Terriers), obesity, concurrent endocrine disease, previous surgeries, as well as toxicities and certain medications (azathioprine, L-asp). A recent study by Lem, et. al. found that dietary factors were significantly associated with AP in dogs. A history of getting into the trash a week before admission and regular feeding of table scraps were found to increase the odds of pancreatitis.

Common clinical signs for dogs include vomiting, weakness, depression, AND diarrhea. Physical exam findings can reveal hyperthermia, dehydration, icterus, abdominal pain/distension, as well as evidence of systemic complications including dyspnea, petechiation, arrhythmia, and shock/collapse.

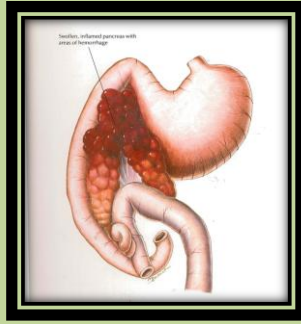
Diagnostic work-up for AP should begin immediately with baseline

labwork (complete blood count, chemistry profile, urinalysis). Elevated liver enzymes may be secondary to ischemic or toxic hepatocellular damage or biliary stasis; hypoalbuminemia from leaky inflammatory conditions; electrolyte disturbances; azotemia; leukocytosis (often with a regenerative left shift); hemoconcentration; anemia; or thrombocytosis/thrombocytopenia are all possible abnormalities. It is important to remember that there may be no abnormalities identified on baseline bloodwork even with severe cases of pancreatitis.

Amylase and lipase are not very sensitive or specific as markers of AP. These values may be elevated with any intra-abdominal disease or renal disease when their clearance is affected. Also, these values may be normal even in confirmed cases of pancreatitis. Trypsin-like immunoreactivity (TLI) should also not be used to diagnose pancreatitis as it is



# Pancreatitis Cont...



neither sensitive nor specific. An additional diagnostic test that can be utilized in the work-up of pancreatitis is the species-specific pancreatic lipase immunoreactivity (cPLI/fPLI). This test has recently been validated as both sensitive and specific in dogs and cats. Furthermore, serial evaluation of PLI may be helpful to monitor disease progression. False positives are possible secondary to other disease conditions but a negative PLI can usually be interpreted as a true negative. Abdominal radiographs are a useful diagnostic tool and are essential for ruling out other acute abdominal conditions, but are neither sensitive nor specific for pancreatitis. Radiographic changes were identified in ~24% of dogs with fatal AP. Abdominal ultrasound is a very useful imaging modality to evaluate the pancreas and has a reported 68% detection rate for fatal AP in dogs. Although the appearance of the pancreas on ultrasound may be normal, there are other specific findings that may be useful in the diagnosis of pancreatitis (ie hypoechoic pancreas surrounded by hyperechoic peri-pancreatic mesentery).

Owners should be warned that even the most BAR patient is considered a critical emergency once pancreatitis is

diagnosed. These patients are at risk of life-threatening complications (severe systemic inflammatory conditions, multi-organ failure, disseminated intra-vascular coagulopathies and death). All patients should be given a prognosis of guarded to poor with the risk of developing respiratory distress, acute kidney failure, DIC, pancreatic necrosis and fatal AP. Mortality rates in dogs have been reported to be 27-42%. Therefore, emergency treatments, and supportive care should be initiated immediately without delay.

Treatment is focused on supportive care and close in hospital monitoring. Aggressive IV fluid therapy, electrolyte correction, pain control, gastro-protectants, anti-emetics and nothing per os are the mainstay of emergency medical management. Hospitalization is often required for a minimum of 24-48 hours, but patients may require upwards of 5-7 days or weeks in hospital based on individual patient response.

During this time, aggressive

medical management and close monitoring of patient vitals and bloodwork (CBC, chemistry values and coagulation panel at a minimum) are essential to monitor for the development of serious, life-threatening complications.

Additional therapies that may be indicated on a case by case basis include antibiotics, nutritional support and fresh frozen plasma transfusions. The use of antibiotics in veterinary patients for AP is controversial but may be important to decrease mortality in certain cases. FFP transfusions are often reserved for those patients that develop coagulopathies.

*Feline pancreatitis is different from canine cases in a few clinically relevant ways. Most cats do not have vomiting as an initial presenting complaint (<40%) but nearly 100% of cats present with non-specific clinical signs of lethargy and anorexia. Etiology can be infectious (toxoplasma), traumatic, surgery related, secondary to cholangiohepatitis, or idiopathic. Feline cases are often more chronic with fibrosis and atrophy of the pancreas. Acute pancreatitis*

*can still affect cats and these cases may present with acute severe systemic disease and bi-cavitary effusion. Cats often develop hypotension secondary to pancreatitis and therefore antibiotics are more likely to be indicated to avoid bacterial translocation from decreased gut perfusion, as well as for the potential complicating condition of cholangiohepatitis.*

*Amoxicillin, Baytril and metronidazole may be started for these reasons. Another difference with cats that owners must be warned about is the life-threatening complication of hepatic lipidosis. Therefore, the goal is often to get our feline patients eating in hospital as soon as possible and an appetite stimulant (mirtazapine) or nutritional support (esophageal feeding tubes) may be indicated even on an emergency basis.*

Should you have question regarding diagnostics and or treatment for a patient you suspect has AP, please do not hesitate to contact our staff for assistance.

## Introduction of Specialists

If you have a patient that needs the services of a board certified ophthalmologist, please call 832-593-8387. Our staff will help coordinate these services with Dr. Nicholas Millichamp, BVetMed, PhD, DVOPhthal, DECVO, MRCVS, DACVO.

Medical records should be emailed to aecwh@yahoo.com or faxed to 832-593-8388. If possible, email digital radiographs in DICOM format.

Use your smart-phone QT reader to scan the above code to visit the Ophthalmology page on our website.



## Zinc Toxicity

By Mitzi Falconer

Zinc toxicity is a rare disorder that seldom comes to the minds of many veterinarians. This form of toxicity is seen with canines, but also can affect felines. Zinc toxicity is mainly caused by the ingestion of zinc-containing foreign bodies or products. After ingestion of such foreign bodies or products, the zinc that is contained in the materials is irritating to the stomach and commonly causes gastrointestinal upset. The following are most common causes of zinc toxicity:

1. Pennies minted after 1982 due to the significantly higher concentration of zinc than pennies minted in 1982 or before. (toxic dose of 1-3 pennies)
2. Zinc nuts and bolts, which can be found in transport cages
3. Galvanized metals
4. Zinc-containing ointments (e.g. zinc oxide ointment)
5. Zinc game pieces from board games

What are some symptoms and signs associated with zinc toxicity? The key signs to look for are vomiting, diarrhea, lack of appetite, lethargy, and pale gums. Continued exposure of zinc leads to a fatal blood disorder known as hemolytic anemia. This occurs because zinc interferes with copper and iron utilization in the production of red blood cells. Hemolytic anemia may be noted by a complete blood count or by the following signs: pale, often

jaundiced color of mucus membranes and skin or a brownish orange color to the urine.

The following tests are usually performed by a veterinarian to diagnosis zinc toxicity. First complete blood count would be performed to rule out hemolytic anemia. A serum biochemical profile would be performed to evaluate the kidneys and monitor elevated bilirubin in a jaundiced patient. A urinalysis is performed to fully assess the patient's kidney function. Then, the next step would be to perform radiographs to rule out any visualized zinc-containing foreign bodies. Lastly, the level of zinc toxicity in a patient can be diagnosed through a serum sample that reveals if the blood zinc level is greater than 0.7mcg/ml.

The goal in therapeutic treatment of zinc toxicity is to remove the initiating cause and provide the patient with supportive care. If the zinc containing items are present in the gastrointestinal tract, then it may be removed by endoscopy or surgery. Once items causing toxicity are removed, then intravenous fluids or blood products are used as supportive therapy in conjunction with continued monitoring of anemia and additional complete blood count and chemistry panels. Chelation therapy may also be used to decrease toxic zinc blood levels. Zinc toxicity results in gastric irritation and this can be treated with gastrointestinal protective

medications. Owner compliance with therapeutic support at home is also required for a patient to overcome zinc toxicity. The owner will need to administer all prescribed medications to the patient at home that is received from their veterinarian. If the patient showed significant vomiting and/or diarrhea, then the owner would need to give the patient a bland diet to help restore normal bowel functions. Follow up appointments maybe required of the patient to monitor blood for improvement of anemia. Improvement should be seen in the patient at home after initial supportive care is administered in the hospital. In the event that improvement does not occur at home, an owner would want to contact their veterinarian to arrange further evaluation of the patient.

Client education is the best prevention in avoiding zinc toxicity. Educating owners to put coins safely away in areas inaccessible to animals, and do not encourage or allow animals to chew on their travel cages. In the event that an owner realizes that a pet may have eaten any zinc containing item, it is advised that the owner contact their pet's veterinarian as soon as possible. Prompt treatment of the pet may prevent serious illness in the future.



### Miss a Newsletter?

You can download and read all past issues on our website at [www.aecwh.com](http://www.aecwh.com)

You can also request to be added to our electronic mailing list by sending an email to [newsletter.aecwh@hotoffice.net](mailto:newsletter.aecwh@hotoffice.net)

Please include your name, position and clinic at which you work.



Use your smart-phone QT reader to scan the above code to visit the rDVM page on our website.

## Interested in CE for Your Staff?

As part of our ongoing commitment to veterinary education, the Animal Emergency Center of West Houston conducts [RACE Approved](#). Continuing Education courses for the local veterinary community. If you are interested, please contact us at [aecwh@yahoo.com](mailto:aecwh@yahoo.com) or visit our website at [http://www.aecwh.com/CE\\_Opportunities.html](http://www.aecwh.com/CE_Opportunities.html) so we can coordinate a time that works for you to provide your staff with Continuing Education in one of the following areas:

- The Art of Handling Emergencies
- CPR
- Blood Draw & IV Catheter Wetlab
- Radiology and Ultrasound Rounds
- Discussing Finances with Clients



## Friends of Moose

On January 1, 2008, Moose, a seven-year-old male Rottweiler mix, rescued at 6 months, was euthanized at the Texas A & M Small Animal Clinic in College Station, Texas.

Moose's owner established a nonprofit organization, Friends of Moose, to financially assist pet owners, who have fallen on hard times, seeking emergency treatment for their animal. One by one, friends have joined in to assist.

The Animal Emergency & Referral Center of West Houston is working closely with Friends of Moose to help others in our community.

To see more on some of the pets we've helped, "like" us on Facebook at ([www.facebook.com/aecwh](http://www.facebook.com/aecwh)).

If you would like to help, please visit the Friends of Moose website ([www.friendsofmoose.org](http://www.friendsofmoose.org)) to make a donation.



The Animal Emergency & Referral Center of West Houston has put together an easy-to-use **CRI Calculator** and we are offering it to you for use in your practice. The cost of this Excel Workbook is \$25.00 and all proceeds will benefit Friends of Moose, a non-profit organization which offers financial assistance to those in need of emergency services.

Visit our website at [www.aercwh.com](http://www.aercwh.com) to request your copy today.

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