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The world-class 24-hour specialty hospital that delivers complete peace of mind for you, your clients, and their precious pets.



Tylenol Toxicity

Acetaminophen (Tylenol) is toxic to both dogs and cats. Cats are much more susceptible. The minimum toxic dose for dogs is 100 mg/kg in a single dose, although multiple doses (even at lower doses) can also cause illness. The minimum toxic dose for cats is 40 mg/kg or less. Acetaminophen is absorbed very rapidly from the GI tract, sometimes within 60 minutes of ingestion.

PATHOGENESIS:

The body metabolizes acetaminophen via two different pathways; the glucuronic acid pathway and via the cytochrome P-450 system, primarily in the liver. The first pathway produces a non-toxic metabolite that is quickly saturated. When this pathway is no longer available, the cytochrome P-450 pathway is favored. This pathway creates a metabolite which eventually leads to cellular necrosis. Cats have a decreased capacity for the glucuronic acid pathway, which explains why they are more sensitive to this toxin. The liver suffers direct cellular damage from the oxidative damage and the hemoglobin in the red cells is oxidized, causing methemoglobinemia (reversible), or Heinz body formation (non-reversible). This causes more diffuse damage due to tissue hypoxia.

CLINICAL SIGNS:

Dogs are more commonly affected by acute hepatic necrosis rather than methemoglobinemia. The most common presenting signs include anorexia, vomiting, and abdominal pain (can be 24-48 hours post ingestion). Less commonly, the patient may also have brownish, cyanotic or icteric mucous membranes due to methemoglobinemia. Cats are more commonly affected by methemoglobinemia and Heinz body formation than liver disease. Common presenting signs in cats include respiratory distress, tachypnea, icteric or brownish mucous membranes, anxiety, facial edema, depression, weakness, and vomiting.

LABORATORY:

Methemoglobinemia/methemoglobinuria, Heinz bodies, anemia, metabolic acidosis, elevated liver enzymes and total bilirubin.

TREATMENT:

Treatment consists of decontamination of the GI tract if the ingestion was known to have occurred within the past 3-4 hours. Vomiting should be induced and then activated charcoal and osmotic cathartics such as sorbitol should be administered. After GI decontamination has been attempted, N-acetylcysteine is given to bind directly to acetaminophen metabolites. This medication also replenishes glutathione and sulfhydryl groups which also help to detoxify the metabolites. Ascorbic acid is also given to reduce the methemoglobin back to oxyhemoglobin. Cimetidine is given to inhibit the action of cytochrome P-450 in order to decrease the rate of formation of the active (toxic) metabolite. Cimetidine is known to inhibit the cytochrome P-450 system more than the other H₂ blockers, so this is the drug of choice over famotidine or ranitidine. Supportive care should also be given as needed, including IV fluids, nutritional support, pain management, oxygen therapy and blood and/or plasma transfusions.

The prognosis is guarded to poor in patients that have already started to show clinical signs of liver failure and methemoglobinemia. For affected dogs, death is possible 2-5 days post ingestion; for affected cats, death is possible 18-36 hours post ingestion. However, early detection and aggressive treatment may avert clinical signs and death, even after a lethal dose has been ingested.

AT VESCONE, WE HAVE ANTIDOTES TO MANY TOXIC SUBSTANCES AND PARTICIPATE IN THE VETERINARY LIFELINE PARTNERS PROGRAM WITH THE NAPCC. THIS ALLOWS US TO GIVE OUR CLIENTS UP TO THE MINUTE INFORMATION ON HOW TO TREAT VARIOUS TOXICITIES.

PLEASE CALL OUR HOSPITAL ANYTIME FOR QUESTIONS ON THIS AND TREATMENT FOR INGESTION OF THIS AND OTHER TOXIC SUBSTANCES. WE ARE OPEN 24 HOURS A DAY, 7 DAYS A WEEK.