



VETERINARY VOICE:
Tips of the Trade

Emergency & Critical Care – Grape & Raisin Toxicity

| | |
|---|---|
| Definition | Dogs are exposed to grapes and raisins frequently, whether eating them off the vine, stealing them from plates, ingesting candy (especially yogurt or chocolate covered) containing raisins, or even being fed them by their owners as treats or training aids. Unfortunately, dogs can have dangerous reactions to grapes and raisins. Sensitive dogs have a risk of initial gastrointestinal upset followed by acute renal failure (ARF). |
| Pathogenesis | In cases of grape or raisin toxicosis in dogs, the actual mechanism of toxic action remains unknown. The exact pathophysiology of ARF following the ingestion of grapes or raisins remains undetermined. Theories include metabolic disruption, a nephrotoxic mycotoxin, and an idiosyncratic reaction. Dogs that have developed ARF were exposed in various ways. Ingestions include grapes purchased from a grocery store as well as grapes found in the backyard, grape pressings from wineries, and both the seedless and seeded varieties. Some of the grapes involved were tested from pesticides, heavy metals and mycotoxins (All findings were negative). It is unclear if the skin of the grape must be ingested for ARF to occur. Currently, grape-seed extract is not considered a threat; only the grape or raisin itself is considered a danger. So far, dogs are the primary species affected. Whether other species are affected remains unknown. |
| Clinical Signs | Vomiting is one of the initial signs of grape or raisin toxicity and can occur within the first 2 hours. Other initial signs that can occur within the first 5 to 6 hours of exposure include diarrhea, lethargy, and polydipsia. Signs of ARF may develop wither within 24 hours or several days after exposure. Signs of ARF may include anorexia, lethargy, depression, vomiting, diarrhea, abdominal pain, tremors, and hypovolemia. Changes in the patient’s blood chemistry may be noted and mainly involve hypercalcemia, blood urea nitrogen, creatinine, and hyperphosphatemia. Tubular degeneration and necrosis of the kidneys may follow. Tubular necrosis may be seen on histopathology. Mineralization of the kidneys has also been seen in some cases. |
| Toxic Dose | At this time, the lowest documented toxic grape or raisin dose is 0.32 to 0.65 oz/kg. Without knowing the exact mechanism of action, all cases of grape or raisin ingestion should be considered potentially serious. |
| Diagnosis | Clinical signs of grape or raisin toxicosis are similar to those of other causes of ARF. Diagnosis of grape toxicity is based on history of exposure, type of clinical signs, and evidence of ARF. Chemistry profiles should be used to evaluate the function of the kidney. Other common differentials for AFT, such as ethylene glycol ingestion, trauma, and other disease processes, should be discussed. |
| Treatment | Management of a patient with grape or raisin toxicosis depends on the animal’s initial presentation. Decontamination by emesis, followed by administration of activated charcoal, is important in all recent ingestions. Emesis should be induced within the first 2 hours after exposure. The longer emesis is delayed after exposure, the less likely it is to be effective. Fluid diuresis for the first 48 hours may help prevent AFT from developing. Blood chemistry values, including renal enzymes, should be monitored for 72 hours. Medications such as furosemide, dopamine, or mannitol can be used in anuric renal failure. Hemodialysis or peritoneal dialysis may be of benefit if available. Basic supportive care and monitoring during hospitalization is important. |
| Prognosis | Prognosis depends on many factors. Condition of the animal on presentation, success of decontamination, and progression of clinical signs can help determine the outcome. Prognosis is favorable if the basement membrane of the kidneys remains intact and supportive care is implemented. If the dog becomes anuric, the prognosis is poor. |
| Questions? Emergency & Critical Care Experts: Danielle Babski, Residency Trained in ECC Heather Connally, MS, DVM, Diplomate ACVECC Dimitri Brown, DVM Christina Bejarano, DVM | The Veterinary specialty Center of Tucson has a board-certified critical care specialist, resident trained critical care specialist, and internship trained experienced emergency veterinarians available for questions and consultations on emergency conditions 7 days a week. Board-certified criticalists have four additional years of training and are certified by the American College of Veterinary Emergency and Critical Care to assure competency in their field. |