Anticoagulant Rodenticide Intoxication

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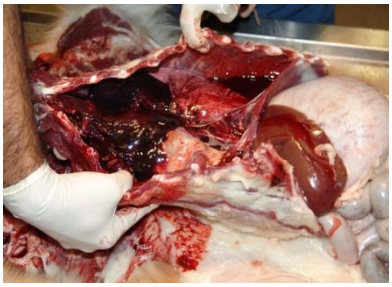
First (warfarin, diphacinone, chlorophacinone) and second (brodifacoum, bromodiolone, difethialone and difenacoum) generation **anticoagulant rodenticide (AR) exposure** is one of the leading causes of toxicant-induced morbidity and mortality in pet dogs. AR toxicosis is the most common toxicosis detected in dogs based on samples submitted to the CAHFS' Toxicology section. Common signs of AR toxicosis include anorexia, weakness, coughing, epistaxis and dyspnea, although other signs such as hematuria, lameness or seizures have been reported. Since many of the clinical signs are non-specific in nature, a diagnosis of AR toxicosis can be initially missed in the absence of a history of exposure to an AR-containing bait. Prolonged coagulation times along with detection of an AR in an appropriate sample help to confirm intoxication. The most common postmortem findings in intoxicated dogs include intrapulmonary, intrathoracic or intraabdominal hemorrhage.



Intrathoracic hemorrhage seen in a dog.

Exposure in dogs is most likely from direct ingestion of AR-containing baits. CAHFS has also documented the occurrence of one or more AR in wildlife including mountain lions, bobcats, coyotes, foxes, Pacific fishers, badgers, raccoons, feral pigs, turkey vultures and golden eagles. In contrast to pet dogs, the most likely source of exposure for wildlife predators and scavengers is via ingestion of exposed prey species such as mice, rats and squirrels. Although uncommon, some AR baits contain a dye that causes a marked color change of fat and tissues in animals after ingestion (see photo of feral pig). Second generation AR are particularly hazardous due to their prolonged residence time in tissues such as liver. The long tissue half-lives result in the need for prolonged vitamin K treatment, which is antidotal. The toxicity of AR is species dependent. For example, cats (either domestic or wild) appear to be relatively resistant to AR intoxication compared to canine species. Unfortunately, the toxicity of AR in many wildlife species is largely unknown. Concern about exposure of non-target species, including children, domestic pets and various wildlife species, to AR has led the US EPA to recently place new restrictions on the use of AR. A summary of US EPA actions can be found at http://www.epa.gov/oppsrrd1/reregistration/rodenticides/finalriskdecision.htm. These restrictions will likely decrease the exposure of household dogs to AR and hopefully decrease the number of dogs presented for treatment. The impact that the restrictions will have on wildlife exposure remains to be seen.

Diphacinone and blue dye from baited grain in feral pig.

CAHFS offers testing for all commonly used AR. Specimens to submit are serum (antemortem), liver (postmortem) and suspect bait samples.