

# ANTICOAGULANT RODENTICIDE POISONING

## BASICS

### OVERVIEW

- An “anticoagulant” is something that prevents blood from clotting; a “rodenticide” is a product that kills rodents (such as mice and rats)
- Blood-clotting disorder (known as a “coagulopathy”) caused by reduced vitamin K<sub>1</sub>-dependent clotting factors in the circulation after exposure to anticoagulant rodenticides
- “Clotting factors” are components in the blood involved in the clotting process—the clotting factors are identified by Roman numerals, I through XIII

### SIGNALMENT/DESCRIPTION of ANIMAL

#### Species

- Dogs and cats

### SIGNS/OBSERVED CHANGES in the ANIMAL

- Difficulty breathing (known as “dyspnea”)
- Bleeding
- Localized mass of blood in a tissue or organ (known as a “hematoma”)—often along the lower areas of the body (known as the “ventrum”) and at sites where intravenous catheters were placed or blood was drawn (known as “venipuncture sites”); may have multiple hematomas
- Muffled heart or lung sounds
- Pale gums and moist tissues of the body (known as “mucous membranes”)
- Sluggishness (lethargy)
- Depression

### CAUSES

- Exposure to anticoagulant rodenticide products
- First-generation coumarin anticoagulants (such as warfarin, pindone)—largely replaced by more potent second-generation anticoagulants
- Second-generation anticoagulants (such as brodifacoum, bromadiolone, diphacinone, and chlorophacinone)—generally more toxic and persist much longer in the animal’s body than first-generation agents
- Difenthialone (D-Cease™ Mouse and Rat Bait Pellets)—highly toxic to mice and rats; less toxic to dogs than are brodifacoum, bromadiolone, chlorophacinone, and warfarin

### RISK FACTORS

- Use of anticoagulant rodenticides
- Anticoagulant rodenticide poisoning may be slightly more likely in the spring and fall, when rodenticide products are used
- Small doses over several days more dangerous than a single large dose; either type of exposure may cause bleeding problems
- Secondary poisoning by consumption of poisoned rodents—unlikely

## TREATMENT

### HEALTH CARE

- Inpatient—sudden (acute) crisis
- Outpatient—consider once the blood-clotting disorder (coagulopathy) is stabilized
- Fresh whole blood or plasma transfusion—may be required if pet is bleeding; provides immediate access to vitamin K-dependent clotting factors; whole blood may be preferred with severely low red-blood cell count (known as “severe anemia”) from sudden (acute) or long-term (chronic) blood loss

### ACTIVITY

- Confine patient during the early stages; activity enhances blood loss

### DIET

- No recognized effect

### SURGERY

- Procedure to tap the chest (known as “thoracocentesis”)—may be important for removing free blood in the space between the chest wall and lungs (known as the “pleural space”), which causes difficulty breathing (dyspnea) and breathing failure
- Must correct blood-clotting disorder (coagulopathy) before surgery

## MEDICATIONS

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive.

- Vitamin K<sub>1</sub>—administered by mouth, as directed by your pet’s veterinarian; length of treatment depends on the specific anticoagulant rodenticide product to which the animal was exposed; feeding of a small amount of fat, such as canned dog food, helps absorption of vitamin K<sub>1</sub>

## FOLLOW-UP CARE

### PATIENT MONITORING

- Blood tests (activated clotting time [ACT] and prothrombin time [PT]) to evaluate clotting status—assess effectiveness of therapy; monitoring continued 3 to 5 days after discontinuation of vitamin K<sub>1</sub> treatment

### PREVENTIONS AND AVOIDANCE

- Do not allow animals to have access to anticoagulant rodenticides

### POSSIBLE COMPLICATIONS

- Secondary bacterial pneumonia after bleeding into the lungs
- Death

### EXPECTED COURSE AND PROGNOSIS

- Patient survives the first 48 hours of sudden (acute) blood-clotting disorder (coagulopathy)—prognosis improves

## KEY POINTS

- Anticoagulant rodenticide poisoning is a common problem—many rodent baits are sold over the counter and widely used in homes
- Re-exposure of the animal to anticoagulant rodenticides could be a serious problem
- Do not allow animals to have access to anticoagulant rodenticides

