

LEAD POISONING

BASICS

OVERVIEW

- Poisoning owing to sudden (acute) or long-term (chronic) exposure to some form of lead
- Blood lead levels are over 0.4 ppm

SIGNALMENT/DESCRIPTION of ANIMAL

Species

- Dogs more commonly than cats

Mean Age and Range

- Mainly dogs less than 1 year of age

SIGNS/OBSERVED CHANGES in the ANIMAL

- Primarily gastrointestinal and nervous system signs
- Gastrointestinal signs often precede central nervous system signs; are most common with long-term (chronic), low-level exposure
- Central nervous system signs—occur more often with sudden (acute) exposure; more common in younger animals
- Ingestion of lead objects
- Vomiting
- Diarrhea
- Lack of appetite (known as “anorexia”)
- Abdominal pain
- Regurgitation (return of food or other contents from the esophagus or stomach back up through the mouth) due to an enlarged esophagus (part of the digestive tract, the tube running from the throat to the stomach; condition known as “megaesophagus”)
- Sluggishness (lethargy)
- Hysteria
- Seizures
- Blindness
- Cats—sense of balance is altered (known as a “vestibular disorder”), with signs such as short, rapid movements of the eyeball (known as “nystagmus”) and wobbly, incoordinated or “drunken” appearing gait or movement (known as “ataxia”) reported

CAUSES

- Ingestion of some form of lead—paint and paint residues or dust from sanding; car batteries; linoleum; solder; plumbing materials and supplies; lubricating compounds; putty; tar paper; lead foil; golf balls; lead object (such as shot, fishing sinkers, drapery weights), leaded glass
- Use of improperly glazed ceramic food or water bowl
- Lead paint or lead-contaminated dust or soil are the most common source for exposure

RISK FACTORS

- Animal less than 1 year of age
- Living in economically depressed areas
- Living in old house or building that is being renovated

TREATMENT

HEALTH CARE

- Inpatient—first course of chelation, depending on severity of clinical signs; “chelation” is the use of specific chemicals to tie up the lead and allow it to be removed from the body
- Outpatient—chemicals administered by mouth to tie up the lead and allow it to be removed from the body (known as “oral chelators”)
- Balanced electrolyte fluids—Ringer’s solution; replacement of hydration deficit
- Flushing the stomach (known as “gastric lavage”) or whole bowel irrigation—may be indicated

SURGERY

- Surgical removal of lead objects from the gastrointestinal tract may be necessary

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.

- Emptying or evacuation of gastrointestinal tract—saline cathartics; sodium or magnesium sulfate; “cathartics” are substances that evacuate the bowels
- Control of seizures—diazepam or phenobarbital
- Alleviation of fluid build-up in the brain (known as “cerebral edema”)—mannitol and dexamethasone
- Some evidence that antioxidants or thiol-containing drugs may be useful—examples include vitamins C and E, α -lipoic acid, N-acetylcysteine; optimal doses not determined
- B-vitamins, especially thiamine, also may be useful; optimal doses not determined
- Reduction of lead in the body (chelation therapy)—CaNa₂EDTA is a chelator for lead, patient may need multiple treatment courses, if blood lead concentration is high (allow 5-day rest period between treatment courses); succimer is a heavy metal chelator administered by mouth and is an alternative to CaNa₂EDTA (may administer per rectum, if clinical signs [such as vomiting] preclude oral administration)—advantages over other chelators: can be given by mouth, allowing for outpatient treatment

FOLLOW-UP CARE

PATIENT MONITORING

- Blood lead levels—should be less than 0.4 ppm; assess 10 to 14 days after stopping the use of specific chemicals to tie up the lead and allow it to be removed from the body (chelation therapy)

PREVENTIONS AND AVOIDANCE

- Test paint, dust, soil prior to animal access, if likelihood of lead contamination
- Determine source of lead and remove it from the patient’s environment

POSSIBLE COMPLICATIONS

- Permanent nervous system signs (such as blindness) occasionally

EXPECTED COURSE AND PROGNOSIS

- Signs should improve dramatically within 24 to 48 hours after initiating the use of specific chemicals to tie up the lead and allow it to be removed from the body (chelation therapy)
- Prognosis—favorable with treatment
- Uncontrolled seizures—guarded prognosis

KEY POINTS

- Potential of adverse human health effects of lead exposure; public health officials should be notified of lead poisoning in pets
- Determine the source of the lead

