

## LEAD INTOXICATION

Lead is a heavy metal found in old paint, solder, certain toys, battery plates, some plumbing materials, linoleum, some tile and various other sources. The most common cause of intoxication in small animals is through ingestion. Dogs and birds are usually the species we see affected most.

The poisonous action of lead is to interfere with red blood cell oxygen carrying ability and to increase red blood cell fragility. The main clinical signs are caused by decreased oxygenation of various tissues/systems (ischemia), direct central nervous system damage and direct gastrointestinal damage. The signs most often noted by the owner include: vomiting, constipation or diarrhea, anorexia, abdominal pain, seizures, dementia and/or blindness. Other more subtle signs are possible.

Diagnosis by the veterinarian is ultimately based on blood lead levels. Suggestive changes can be found on routine blood work, especially the complete blood cell count (CBC), such as anemia, nucleated red blood cells and/or basophilic stippling. If a metallic object is ingested, radiographs/x-rays will likely show the object. A routine urinalysis may show non-specific changes of renal/kidney damage. In addition, lead levels can be obtained from urine, tissue and feces, but blood levels are considered most diagnostic.

Initial treatment is based on decontamination, if possible. Induction of vomiting, potentially gastric lavage and catharsis to promote clearance of ingested sources and decrease absorption. Endoscopy and/or surgery may be necessary in some cases to remove the material. More specific therapy involves chelation or administration of agents that bind to the lead, decrease the occurrence of clinical signs and promoted excretion. Chelators available include succimer, calcium EDTA, dimercaprol and penicillamine. Unfortunately, chelators themselves are not without side effects and toxicity and this must be kept in mind. Succimer is possibly the least toxic and most commonly used chelator. Treatment is otherwise supportive and symptomatic. Empiric antibiotic therapy may be instituted, as lead has been shown to be immunosuppressive.

The overall prognosis is good if lead toxicosis is caught early. Once signs become severe or chronic, the prognosis worsens; although, recovery to an acceptable level is reported. Residual central or peripheral nervous system signs may exist. The key is early identification and treatment. Emergency attention is certainly warranted.