

Tufts Veterinary School Clinical Case Study of the Month
Lead Toxicity in an Amazon Parrot
by Julie Sheldon, DVM, Exotics Animal Intern

Presentation:

A 12-year-old Amazon parrot presented to the Exotics Service at Tufts University School of Veterinary Medicine with a one-day history of lethargy, vomiting, polydipsia and bloody eliminations. This bird lived in a 60-year-old house with two other birds, was fed an all seed diet, and was kept in a new cage lined with newspaper. Her owners played with her out of the cage during breakfast and several other times throughout the day. She had a history of chewing objects, including, recently, a rope toy and a pencil. The owners obtained her last summer and said she had been healthy until presentation at Tufts.

On physical examination, she was ataxic, lethargic, and extremely dehydrated (8 percent– 10 percent). Her eliminations were watery and appeared to contain frank blood. Palpation of her crop, abdomen and keel were within normal limits. Differential diagnosis included foreign body, lead poisoning, enteritis, hepatopathy and bacterial infection.

Diagnosis:

A complete blood cell count (CBC), chemistry profile and blood lead test were performed. The blood lead level exceeded the maximum level of our instrument at 65 µg/dl. The CBC revealed an anemia (22 percent (42 percent– 52 percent)) and an elevated white blood cell count (WBC) count ($26.6 \times 10^3/\mu\text{l}$ (8.0 – $25.0 \times 10^3/\mu\text{l}$)). The chemistry profile showed an elevated CK (1718 U/L (140 – 410 U/L)). Whole body radiographs showed a large amount of material of increased opacity in the ventriculus.

The blood lead test is a definitive diagnosis of lead poisoning. The clinical signs, elevated WBC count, anemia, radiographic findings and elevated CK supported this diagnosis.

Treatment:

Initial treatment consisted of a subcutaneous bolus of fluids (LRS with 2.5 percent dextrose at 50 ml/kg/day, giving a bolus of 1/3 daily rate or 15 ml). Chelation therapy with CaEDTA (35 mg/kg sc bid x 5 days) and Penicillamine (55 mg/kg PO BID x 5 days) were initiated following the blood lead test results. We added 1000 mg CaEDTA to a 500 ml bag of 0.9% NaCl to create a 2 mg/ml solution.

Published material recommends administering CaEDTA intramuscularly. In our experience, this causes necrosis of muscle tissue so we elected to give it subcutaneously. The bird's hydration status was further corrected with subcutaneous fluids (LRS, 8 ml SC, BID) given at the same time as the CaEDTA.

We began antibiotic therapy utilizing Clavamox (125 mg/kg PO BID) to prevent a possible secondary bacterial infection. The parrot was hospitalized in an incubator at 32.2° C. and was able to access food and water at all times.

Within 24 hours of chelation, marked improvement was noted in her attitude, hydration status and eliminations. Since she was no longer regurgitating, we tube fed her a mixture of one part Metamucil powder to one part Avian Critical Care (Mazuri) for a total of 5 ml PO twice daily. The high fiber helps to mechanically push the lead through the system and the critical care diet is highly digestible and nutritious. We also offered her peanut butter as this can be an additional aid in moving lead through the gastrointestinal tract. By the third day of chelation therapy, she was eating on her own and we discontinued tube feeding. The Clavamox, CaEDTA, and Penicillamine were continued for a total of five days of treatment.

Outcome:

A repeat of the blood lead test and CBC were obtained on the fifth day of therapy. The blood lead test was within normal limits (3.3 µg/dl, normal is less than 15-25 µg/dl) on the date of discharge. She was still anemic (25% (42 – 52%)), but her WBC count was within normal limits ($16.8 \times 10^3/\mu\text{l}$ (8 – $25 \times 10^3/\mu\text{l}$)). Increased polychromasia, numerous early erythrocytes and slight poikilocytosis were noted, indicating a regenerative response to the anemia. She was discharged with instructions to the owners to closely monitor her for a recurrence of clinical signs. Since lead is stored in bone, there are occasional relapses requiring a repeat of the chelation therapy.

Discussion:

It is our responsibility to advise the owners to discover the source of lead in their household for the sake of pets as well as humans living there. This is especially true if there are young children in the family. Lead poisoning is still relatively common in humans and animals. Lead paint is still available and appropriate for outdoor use only. Other items that may contain lead include linoleum, drywall, zippers, costume jewelry, the foil around champagne bottles, some types of window blinds, and **some bird toys**. A blood lead test is available as an easy in-house test. It takes less than five minutes and requires only 50 μ l of blood. (LeadCare Blood Lead Test Kit, ESA, Inc., Chelmsford, MA).

For birds such as this patient, we also recommend a diet consisting of 80;percent pellets (Harrisons or Mazuri) and 20 percent fruits and vegetables, with no human treats.