

IV Lipid Emulsion for Toxicoses



An 11-year-old spayed Jack Russell terrier presented on emergency for acute onset blindness following possible ivermectin ingestion. Examination by a veterinary ophthalmologist revealed an absent direct and consensual pupillary light response (PLR),

menace response, and dazzle reflexes in either eye. Fundic changes were noted, including linear areas of retinal edema. Electroretinography (ERG) results were below normal. The dog's serum was positive for ivermectin. Approximately 3.5 hours after signs were noted, treatment was initiated using a 20% IV intralipid emulsion. Within 30 minutes, slight PLRs and dazzle reflex returned; the dog was sighted enough to navigate obstacles by the end of the infusion (~1.5 hours after treatment initiation). Rechecks 9 and 11 months later revealed normal neurologic reflexes in both eyes and improved, but still abnormal, ERG readings.

The mechanism for ivermectin-induced blindness is not fully understood, but that ERG readings were not completely extinguished at initial examination suggests the retina is not the only location affected; blindness could relate to cranial nerves II and III, as well as cortical involvement. IV lipid therapy may work via a *lipid sink*, in which lipophilic ivermectin is sequestered into plasma lipids, effectively removing it from the CNS. Possible

adverse effects of IV lipid therapy include pancreatitis, fat emboli, phlebitis, and hypersensitivity reactions.

■ Commentary

IV lipid emulsion (ILE) therapy, or *lipid rescue*, has become popular in veterinary medicine for the treatment of many lipid-soluble toxins (eg, local anesthetics), macrocyclic lactones (eg, ivermectin), and other drug toxicities. It is inexpensive and has yet to show significant adverse effects with recommended doses. This study discussed an important point about ILE, in that it may not have the same positive effects in dogs having extreme sensitivity to ivermectin (ie, those with a homozygous mutation in the *ABCB1-1Δ*).

Lipid rescue should not be considered unless conventional and antidote therapies have failed. It may be used as an alternative intervention to avoid ventilator support for toxicity-related respiratory failure. Consultation with an animal poison control center is always recommended to determine which toxin may be removed with ILE infusion and the current dosage recommendations.—*Elke Rudloff, DVM, DACVECC*

■ ■ Source

Ivermectin-induced blindness treated with intravenous lipid therapy in a dog. Epstein SE, Hollingsworth SR. *JVECC* 23:58-62, 2013.

Thoracic Radiography for Pericardial Effusion

Pericardial effusion (PE) typically appears as a generalized enlargement of the cardiac silhouette on radiographs; the degree of cardiomegaly observed depends on amount and rate of fluid accumulation in the pericardial space. A retrospective case-control study was conducted to estimate the accuracy of using quantitative parameters from thoracic radiographs (eg, vertebral heart score [VHS], sphericity index [SI]) as objective measurements of cardiac silhouette to diagnose PE in dogs. VHS reflects the overall dimensions of the cardiac silhouette, including the myocardium and pericardium. An SI of 1 indicates a circular figure; an elongated cardiac silhouette would result in an increased value. The study found that cardiac silhouettes in dogs with PE are larger and more rounded compared with dogs with cardiac disease without PE, although they are only moderately accurate at distinguishing between the two. Cutoffs of >11.9, >12.3, and ≤1.17 for lateral VHS, VD VHS, and global SI, respectively, can be useful indicators for canine PE. Diagnostic accuracy of these indices does not improve substantially when dogs are further grouped based on the amount of pericardial fluid; however, cutoff values of >13.2 and ≤1.15 for VD VHS and global SI, respectively,

can help differentiate dogs with PE from dogs with cardiac disorders without PE. Echocardiography, used as the standard in this study for detecting and evaluating severity of PE, remains the most accurate noninvasive method for pericardial evaluation in dogs.

■ Commentary

Diagnosing PE can be challenging without ultrasonography, which may not be available in the general practice setting. Although dogs with PE do have larger and more rounded hearts as compared with dogs with other cardiac disease without PE, these measurements were only moderately accurate at distinguishing between the dogs with and without PE. Radiography may be somewhat helpful, but echocardiography is the best imaging modality to confidently diagnose PE in dogs.—*Teresa DeFrancesco, DVM, DACVIM (Cardiology), DACVECC*

■ ■ Source

Accuracy of radiographic vertebral heart score and sphericity index in the detection of pericardial effusion in dogs. Guglielmini C, Diana A, Santarelli G, et al. *JAVMA* 241:1048-1055, 2012.

MORE ►