

VetScript

THE OFFICIAL MAGAZINE OF THE NEW ZEALAND VETERINARY ASSOCIATION • DECEMBER 2019



**TOWARDS
A MORE
SUSTAINABLE
VETERINARY
PRACTICE**

1080 POISONING IN DOGS – PREVENTION AND TREATMENT

When it comes to saving dogs poisoned by 1080, time is of the essence. **Virginia Williams** and **Kathy Parton** detail the results of a recent NZVA survey of veterinarians' experiences of treating dogs exposed to the poison, and outline recommended treatment protocols.



Bait station and bait



Department of
Conservation
Te Papa Atawhai



This possum control operation is part of the Peninsula Project Working Together To Protect Our People, Property and Environment
Kia mau ki te mauri o te talao o Hauraki

Warning Poison

Sodium fluoroacetate (1080)

will be present in bait stations from 18/09/2019

- DO NOT touch bait
- WATCH CHILDREN at all times
- DO NOT EAT animals from this area
- Poison baits or carcasses are **DEADLY to DOGS**

For poisoning information: National Poison Centre

For more information contact:

Hauraki Area Office
Department of Conservation (Peninsula Project)

Unauthorised removal of signs or baits is illegal



THE NZVA RECENTLY carried out a survey of companion animal veterinarians to gather their experiences of treating dogs exposed to 1080 poisoning in the past decade. This was initiated after the Ministry for Primary Industries contacted the NZVA with concerns that there may be an understanding among the public that death is inevitable for dogs who eat possums – or other carcasses – from 1080-treated areas.

Eighty-one surveys were received, of which five were incomplete or outside the 10-year period. Of the remaining 76 surveys, 62 respondents had not seen 1080 cases in the past decade; the other 14 had seen a total of 35 dogs, of whom 26 had not survived. Eight of the 26 who had died arrived at veterinary clinics too late for any meaningful treatment to be instigated.

The 13 veterinarians who had treated dogs were asked which of the following drugs they had available in their clinics:

- » Charcoal – 13 (100%).
- » Calcium gluconate – 11 (86%).
- » Sodium bicarbonate – 10 (79%).
- » Acetamide – 3 (21%).
- » Calcium chloride – 2 (14%).
- » Robaxin – 0.

While no record was made of time from ingestion (a factor that greatly influences outcome), the animals who survived were treated as follows:

- » Intravenous (IV) acetamide (McLaren 1999).
 - One survived/three died.

- Drugs available: acetamide, activated charcoal, calcium gluconate, sodium bicarbonate.
- » Emesis, sedation and support.
 - Two survived/five died.
 - Drugs available: activated charcoal, calcium gluconate, sodium bicarbonate.
- » Fluid therapy, valium/thiopentone, probiotic every 30 minutes as fructose source, sodium bentonite clay minceballs.
 - Six survived/four died.
 - Drugs also available: activated charcoal, calcium gluconate, sodium bicarbonate.

Given the high mortality rates, the first line of defence is clearly prevention. If dogs are to be taken into areas where there is even a possibility that 1080, or carcasses of animals killed by the poison, may be present, they should be muzzled to prevent ingestion. Veterinarians can advise clients to keep an eye on 1080 drops through their regional councils or the Department of Conservation website cited below.

Second, although time is of the essence if treatment of 1080 poisoning is to be successful, poisoning may well occur in bush areas far from veterinary clinics. The first stage of treatment is to induce vomiting to remove as much of the poison as possible as soon as possible. It makes sense then for dog owners to carry washing soda crystals (eg, Soft and Safe, sodium carbonate, Greenwood) if they are going into areas where 1080 may have been laid, so that vomiting can be induced at the first sign of problems. The crystals

1080)

8

area

ect)

m offence

TREATMENT IS POSSIBLE IF THE DOG CAN BE TRANSPORTED TO THE NEAREST VETERINARY CLINIC AS SOON AS POSSIBLE. THIS IS SOMETHING THAT VETERINARIANS SHOULD IMPRESS UPON THOSE CLIENTS WHO ARE KNOWN TO TAKE DOGS INTO AREAS WHERE 1080 MAY BE PRESENT.

can be made into a paste with water and put on the back of the dogs' tongues and some water offered after the washing soda has been swallowed. While salt has sometimes been regarded as a useful emetic in dogs, signs of toxicosis appear after ingestion of 2–3g of salt per kilogram of body weight. Ingestion of 4g/kg of salt is considered lethal.

The third point is that treatment is possible if the dogs can be transported to the nearest veterinary clinic as soon as possible. This is something that veterinarians should impress upon those clients who are known to take dogs into areas where 1080 may be present.

Regardless of results indicated by the survey, given the low number of surviving dogs and the previous work that has identified the following treatments as being successful, these protocols remain best practice for treatment. Veterinarians in areas where cases of 1080 poisoning are more likely are encouraged to have appropriate supplies on hand.

TREATMENT PROTOCOL 1 – SODIUM BICARBONATE (PARTON ET AL, 2001):

- 1 Induction of emesis if the animal is fully conscious.
- 2 Gastric lavage and oral administration of activated charcoal.
- 3 Depending on clinical signs, anaesthesia with pentobarbital sodium¹ or gaseous anaesthetics.
- 4 Fluid therapy with normal saline through an IV catheter.
- 5 Infusion of sodium bicarbonate (8.4%w/v) IV at 300mg/kg over

15 to 30 minutes, or give half the calculated dose as a bolus with the remainder infused slowly.

- 6 Because sodium bicarbonate may exacerbate the hypocalcaemia already induced by the 1080 (1080 causes ionised, not total, calcium to decrease [Roy et al, 1980]), monitoring of calcium levels is important, as well as those of potassium for concomitant hypokalaemia. Supplementation should be given as required.

- 7 Maintenance of anaesthesia and fluids until recovery apparent, usually from 12 to 18 hours.

Parton et al (2001) explain that 1080 works by “combining with acetyl-CoA to form fluoroacetyl-CoA, which then combines with oxaloacetate to form fluorocitrate. Fluorocitrate inhibits aconitase and the oxidation of citric acid, resulting in the blockage of the TCA cycle, energy depletion, citric and lactic acid accumulation and a decrease in blood pH. The end result is an accumulation of citrate which binds with serum calcium”.

TREATMENT PROTOCOL 2 – ACETAMIDE (MCLAREN, 1999):

- 1 Induction of emesis if the animal is fully conscious.
- 2 Gastric lavage and oral administration of activated charcoal.
- 3 Depending on clinical signs, anaesthesia with pentobarbital sodium or gaseous anaesthetics.

- 4 Infusion of acetamide dissolved in a warmed five percent glucose solution (15g/litre) at 10ml/kg for the first 15 minutes, reduced to 8ml/kg to the end of the first litre. Infusion should continue at 5ml/kg until resolution of clinical signs.

- 5 Maintenance of anaesthesia and fluid therapy as appropriate until recovery is apparent.

The third of the three successful treatments from the survey, where six out of 10 dogs survived, could be an alternative, but would need further support before being recommended. (vs)

REFERENCES AND FURTHER READING:

¹ While pentobarb has traditionally been used as in Treatment Protocol 1, a continuous infusion of propofol may be a safer alternative.

Anonymous. Pesticide summaries: where pesticides are used www.doc.govt.nz/pesticide-summaries. Department of Conservation

Churchill R. 1080 sodium fluoroacetate toxicity in dogs #3796. *Control and Therapy Series*, Postgraduate Committee in Veterinary Science of the University of Sydney 188, 846, 1996

Eason CT, Wickstrom M. Vertebrate pesticide toxicology manual (poisons). *DOC Technical Series no 23*. Accessed on line 20/12/08 at <http://www.doc.govt.nz/publications/science-and-technical/docts23a.pdf>, 2001

Goh CSS, Hodgson DR, Fearnside SM, Heller J, Malikides N. Sodium monofluoroacetate (Compound 1080) poisoning in dogs. *Australian Veterinary Journal* 83, 474–9, 2005

McLaren J. Treatment of 1080 poisoning in dogs. *VetScript*, 12 (2), 3, 1999

Parton K, Bruere AN, Chambers JP. Fluoroacetate – 1080 in veterinary clinical toxicology. *Veterinary Continuing Education* 208, 141–53, Massey University, 2001

Roy A, Taitelman U, Bursztein S. Evaluation of the role of ionized calcium in sodium fluoroacetate ('1080') poisoning. *Toxicology and Applied Pharmacology* 56(2), 216–20, 1980

Sherley M. Is sodium fluoroacetate (1080) a humane poison? *Animal Welfare* 16, 449–58, 2007