BAY AREA VET MRI
Animal MRI Center

Midazolam for Status Epilepticus in dogs - In Hospital Treatment:

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1. MIDAZOLAM

Dose: 0.2-0.5 mg/kg IV/ Intranasal / IM

b/c its short Half-life (1 hour in dogs) frequent administrations or CRI are needed.

Time to seizure control achieved with each Midazolam administration route:

Intranasal: 0.5-1.6 min

IV: 1.0 4.5 min

Administration

Intranasal: 0.2-0.4 mg/kg

It is the recommended preferred way in ER

It may stop seizure quicker than the IV route.

a) this is an easy route particularly if the dog is seizing on presentation.
b) and may facilitate the IV catheter placement for the other IV drugs.

IV: 0.2-0.4 mg/kg.

It can be given just after the Intranasal dose and followed by the CRI

It may be repeated up to 3 times if not effective.

+ CRI: (given at the same that was effective to stop the seizure).

Given usually via infusion pump, diluted in 0.9% saline or 5% Dextrose solution, with the volume used being equal to the dog's hourly maintenance fluid requirements.

Dosage rate: reduced by 50% eq 6 hours for at least two times before discontinuation.

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Advantages of Midazolam Intranasal

- Likely effective (clinical evidence)
- Likely rapid onset of action (clinical evidence)
- Likely favorable pharmacokinetics
- Avoid first-phase hepatic metabolism.
- Avoidance of blood brain barrier
- No requirement for medical training
- Relatively easy to use
- Suitable for home

Midazolam (MDZ) versus Diazepam (DZP)?

Although both benzodiazepines are potent and safe for the management of SE in dogs and cats. MDZ may be considered a **more potent** and **safer** than DZP

a) More potent than DZP: MDZ is 5 times more potent than DZP
b) Effective – in 2 clinical studies of dogs, was reported that seizure termination was achieved in 70% of dogs regardless the MDZ route of administration
c) Safer than DZP – Central nervous system and respiratory depression are less severe than DZP

In addition:

MDZ can also be given IM (Diazepam no)

It is not light sensitive (like Diazepam)

It doesn't stick in the plastic material and infusion lines (like Diazepam)

However, MDZ may have a shorter half-life and duration of action compared to DZP in dogs that might eventually require MDZ CRI to achieve sustained seizure control.

After what time frame should a BZD bolus should be considered effective?

When should BZD IV CRI should be started?

- A BZD bolus should be considered effective if seizure cessation occurs:
  - Less than 5 minutes after administration
  - and seizure do not relapse in less than 10 minutes after cessation.

- Seizure activity that is controlled with BZDs but relapses within 10-60 minutes may be considered as recurrent SE

- In case of recurrent SE or seizure that doesn't cease after the first bolus, a second bolus of BZP should be administered after a minimum of 2 minutes interval.

- If seizure persists after the second BZP bolus, then:
  - Administration of third BZD bolus followed by a BZD IV CRI should be instituted.
  - And if the SE doesn't cease after the third BZD bolus, a final (fourth) BZD bolus should be administered followed by the second line intervention. (Phenobarbital 15mg/kg/IV bolus or Levetiracetam 60mg/kg/IV bolus)
  - However, the combination of BZD and phenobarbital can also be administered earlier, regardless of the response to the first line of BZD treatment, with the aim to maintain adequate seizure control in the short- and long-term (particularly in cases diagnosed with epilepsy).