

The pharmacokinetics of midazolam after intravenous, intramuscular and rectal administration in healthy dogs

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Administration of drugs belonging to the benzodiazepine class are routinely used to treat prolonged epileptic seizures in dogs. These drugs are most commonly injected into a vein (intravenous), but alternative routes of administration are required when it is not possible to get access to a vein. This study compared the disposition of midazolam after injection into a vein (IV), into a muscle (IM) and rectal administration (PR). Six healthy dogs were administered 0.2 mg/kg midazolam IV, IM or PR. The study was designed such that each dog was administered the drug by all three routes, and the order in which they were administered was randomized. There was a 3 day washout period between each route of administration, to allow the drug to be eliminated from the body before the next dose was administered. Blood samples were collected at baseline and at predetermined intervals until 480 minutes after each drug administration. Midazolam levels were measured in the blood by the technique of high pressure liquid chromatography. Rectal administration resulted in erratic absorption with undetectable to low concentrations in the blood. Peak concentrations of midazolam were measured in the blood about 8 minutes after IM administration, with approximately 50% of the administered dose detected in the blood. Findings from this study suggest that IM midazolam might be useful in treating seizures in dogs when administration into a vein is not possible. However, higher doses might be necessary to account for the intermediate levels of absorption. Rectal administration is likely of limited effectiveness for treating seizures in dogs.

Graph depicting concentrations of midazolam in the blood of dogs following administration by the IV (—), IM (—) and PR (—) routes.

