

A Rough Collie and General Anesthesia

by Jane Meggitt, Demand Media 



You can test your collie for the MDR1 gene.

The rough collie is the classic Lassie type with long hair. Along with beauty, a large percentage of collies -- rough and otherwise -- inherit a gene that causes problems with certain medications. That means affected collies can't take some common anesthesia drugs, or must get them at reduced dosages when they undergo surgery.

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Gene Mutation

Approximately 75 percent of collies inherit a mutation in the MDR1 gene. This involves P-glycoprotein, a protein that keeps substances from crossing the blood-brain barrier and prevents toxin and drug buildup in bodily fluids. Affected collies can experience drug accumulation in the brain and their cerebrospinal fluid. After receiving certain drugs, collies with the gene exhibit neurological problems, with death sometimes occurring. Just under half of affected collies are homozygous for the gene, meaning they are particularly sensitive to drug effects and can't take them at all. The remaining plurality are heterozygous for the gene, so aren't as sensitive but can still be affected. Rough collies aren't the only affected breed -- the mutation occurs in border collies, Shetland sheepdogs, Australian shepherds and other herding breeds, as well as mixed-breed dogs with herding blood.

Testing

If you own a rough collie, it's a good idea to have your tested for the gene mutation. Other common medications, such as the heartworm drug ivermectin and the antibiotic erythromycin, pose dangers for MDR1 dogs. Getting your dog tested is a relatively simple procedure offered by Washington State University College of Veterinary Medicine. After receiving your test kit, you swab the inside of your dog's cheek with a brush provided in the kit and send it back to WSU, after completing an informational form. Alternatively, your vet can collect a blood sample from your dog and send it for testing.

Problematic Anesthetic Drugs

While acepromazine, marketed under the brand name PromAce, is most often used as a tranquilizer, it's also used for preparing pets for general anesthesia. For collies with the gene mutation, "ace" isn't blocked from their central nervous system as it should be for animals without the mutation. An affected collie given ace experiences prolonged sedation. WSU recommends reducing the dose of ace by 25 percent for collies heterozygous for the mutation and reducing it 30 percent to 50 percent for dogs homozygous for the mutation. Another drug used by vets as a pre-anesthetic agent, butorphanol, also causes longer and deeper sedation in dogs with the gene mutation, along with breathing issues. WSU recommends the same dosages for butorphanol as for acepromazine.

Monitoring

If your rough collie requires surgery and general anesthesia, your vet might use acepromazine or butorphanol in reduced doses and will carefully monitor the dog for adverse reactions. Morphine, often used for post-surgical pain control, is another problematic drug for dogs with the MDR1 gene mutation. Your vet might choose another painkiller or give your collie a reduced dose.

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- [American Working Collie Association: AWCA Brings You the Latest Research on Drug Sensitivity in Collies.](http://www.awca.net/drug.htm) (<http://www.awca.net/drug.htm>)
- [Washington State University College of Veterinary Medicine: Get Your Dog Tested](http://www.vetmed.wsu.edu/depts-VCPL/test.aspx)(<http://www.vetmed.wsu.edu/depts-VCPL/test.aspx>)

About the Author

Jane Meggitt has been a writer for more than 20 years. In addition to reporting for a major newspaper chain, her work has appeared in "Horse News," "Suburban Classic," "Hoof Beats," "Equine Journal" and other publications. She has a Bachelor of Arts in English from New York University and an Associate of Arts from the American Academy of Dramatic Arts, New York City.

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