

FELINE PRACTICE – BEHAVIOR

In recent years, diazepam has become the drug of choice of veterinarians in the treatment of anxiety-based behavior problems in cats. When used at the proper dosage, the drug usually produces a calming or sedating affect; however, the potential to produce side effects (e.g., defensive-aggressive behavioral reactions) does exist. By keeping the medicated patient away from other cats until the effects of the drug wear off, the probability of an aggressive display is lowered.

Diazepam-Induced Defensive Aggression in a Cat

Richard H. Polsky, PhD
Animal Behavior Counseling Services, Inc.
2288 Manning Avenue
Los Angeles, California 90064

Introduction

Veterinarians frequently prescribe diazepam to felines in their attempts to solve behavioral problems. In fact, in recent years, diazepam has become the drug of choice to attenuate fear or anxiety-based behavioral problems. When used at the proper dosage, diazepam usually produces a calming or sedating effect in the patient. The risks of using the drug are usually minimal; however, like other drugs, diazepam has the potential to produce side effects. The most common side effects are ataxia, agitation (instead of sedation), excitability, and increased appetite.¹

A previously unrecognized behavioral outcome (i.e., induced defensive-aggressive behavioral reaction) caused by the side effect of increased agitation is described. Veterinarians should be aware of the risks of inducing this kind of behavioral state in the patients they treat with diazepam.

Case Report

Two Burmese cats, Co-Co, a 6-year-old female, and her 5-year-old daughter, Cuddles, were presented for a flea bath. Co-Co and Cuddles were owned by an attentive, middle-age couple. Both cats were in excellent health. Each had been neutered and declawed. The cats were kept exclusively indoors. Both cats were small; each weighed about 7 lbs. The owners described the temperament of CoCo and Cuddles as outgoing and friendly. At night, both cats slept in the owners' bed. During the day, when the owners were at work, the cats had free run of the entire house.

The owners said that incidences of serious fighting between Cuddles and CoCo were rare. They described the cats as very close companions, eating from the same dish, playing together, using the same litter box, and grooming each other.

Because the cats had never had a flea bath before and because they appeared agitated and anxious, the veterinarian recommended sedating the cats with diazepam to help lessen any further anxiety they might experience. Each cat was given an oral dose of 2.5 mg of diazepam. On no prior occasion had the cats ever been given this drug.

About 40 minutes after the drug was administered, veterinary staff personnel noticed a significant increase in CoCo's agitation. She tried to scratch and bite the technician as she was being bathed. Moreover, she began to hiss at Cuddles, who was in her proximity. Cuddles, in turn, started hissing at CoCo. Veterinary staff personnel then elected to separate the cats. An owner was phoned, returned to the hospital, and transported CoCo and Cuddles home in separate carriers.

When the owner arrived home approximately 20 minutes later, intense hissing between the cats continued. The owners concluded that the cats could not be safely put together and took the step of keeping the cats in different parts of the house. Over the course of the next week, the owners tried to reintroduce the cats with little success. CoCo's hissing continued, and this in turn elicited an aggressive/defensive response in Cuddles. Aggressive chases ensued on several occasions. The owners said that serious fighting would have probably happened had they not been there to intervene.

Continued

Discussion

A defensive, agitated behavioral state was induced in CoCo as a result of the diazepam administration. As noted, agitation, instead of sedation, is a known side effect of this drug. The dosage of 2.5 mg may have been excessive given her small size (the recommended dosage range is 1-2 mg).¹ This may have exacerbated the reaction.

CoCo's agitation became directed to the most biologically significant feature in her environment, namely Cuddles. Subsequently, when the effects of the drug waned, the reaction induced in CoCo toward Cuddles continued because of the association formed while under the influence of the drug. The fact that the association occurred with Cuddles and none of the other countless number of environmental features in which an association might have happened is consistent with modern learning theory that suggests that animals are predisposed to connect only with the most biologically significant stimulus in the environment.²

In basic learning theory terminology, Cuddles had become a condition stimulus (CS) for the elicitation of the conditioned fear response (CR) in CoCo. Conditioning was made possible because the diazepam elicited an unconditioned response (UCR) in CoCo in the presence of Cuddles. The learned association which followed was enough to maintain CoCo's defensive reaction (i.e., the conditioned response) toward Cuddles (i.e., the conditioned stimulus) in the absence of the drug.

Behavioral Modification Recommendations

EXPOSURE TRAINING

The owners were instructed to visually expose the cats to each other, first at far distances while restrained in wire mesh cages. When not engaged in exposure training, the owners were instructed to keep the cats apart. As the cats' reactivity to each other waned at far distances, the owners were told to bring the cages closer together for longer periods of time (up to as much as 3 hours). Toward the end of each session, the owners were instructed to feed the cats in the cages. For this early phase of training, the goal was to bring the cats very close together while in the cages for long periods of time without any reactivity to each other.

COUNTER-CONDITIONING SESSIONS

Training continued by allowing one cat to roam while the other cat was caged. The free cat was encouraged to move near the caged cat. When-

ever this happened, a food treat was proffered to both cats, and the unrestrained cat was groomed as a means of further reinforcement for non-aggressive responding.

FREE-INTERACTION SESSIONS

The owners were instructed to place both cats together in an unfamiliar room for brief periods of time. Food rewards were proffered to each cat for pro-social behaviors (e.g., friendly approach), and, if needed, the owners were instructed to immediately punish (with a hand-held ultrasonic device) any hostile actions. Assuming non-hostility between the cats, the owners were instructed to increase the length of the supervised free-interaction sessions in the unfamiliar room before allowing the cats to come together in the rest of the house on a non-supervised basis.

Conclusion

When diazepam is used for the purpose of sedating a cat, veterinarians should be aware of the potential for creating a situation like the one described in this report. One simple precaution is to keep the medicated patient away from other cats until the effects of the drug wear off. This would lower the probability of a cat displaying aggression, and it would prevent the formation of a conditioned response.

Outcome for this case was good. The normal peaceful relationship between CoCo and Cuddles returned in about 4 weeks. Success for problems like this usually depends on three factors:

- the relationship the cats had before the start of the fighting;
- how well-established the habit of fighting had become before the start of behavioral modification; and
- the effort the owners are willing to expend in an attempt to solve the problem.

The cumulative training time needed (in order to accomplish the third factor), spread out over approximately 4 weeks, is about 30 hours. In this case study, the owners were fully compliant in treatment procedures. ■

REFERENCES

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ADDITIONAL READING

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