The prevention and treatment of anxiety-related behaviours in dogs: an exploration using non-pharmacological methods

Discusses the efficacy of non-pharmacological methods for the treatment of anxiety disorders in dogs.

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Introduction

Anxiety-related disorders and the behaviours they cause in domestic dogs (*Canis familiaris*) are common problems encountered by veterinary practitioners (Butler *et al.*, 2011). Anxiety will often manifest as problem behaviours, such as excessive vocalisation, destructiveness, and inappropriate urination or defecation, often in their owners' absence (Konok *et al.*, 2011; Butler *et al*., 2011). To improve the welfare of domestic dogs it is important to address these issues, not only because these behaviours are common reasons for abandonment, relinquishment to shelters or euthanasia, but because it has also been shown that living with anxiety can have a negative impact on the health and lifespan of a domestic dog (Dreschel, 2010; Butler *et al*., 2011).

Discussion

Pharmacological intervention is a popular remedy for reducing the symptoms of anxiety-related disorders. However, many dog owners are reluctant to resort to medication due to the risk of unwanted side effects, addiction, and the potential expense of prolonged use (Butler *et al*., 2011; Kato *et al*., 2012). An attractive alternative that avoids the use of pharmacology for these owners is the behaviour-modification method of systematic desensitisation. This method stemmed from Pavlov's early experimental work with classical conditioning in dogs and is now used for the treatment of phobias or fear responses to a particular stimulus in humans (Butler *et al*., 2011). The treatment involves the gradual and progressive introduction of the phobia-causing stimulus so that eventually the severity of the stimulus that elicited a response before treatment can be reached without generating anxiety (Butler *et al*., 2011).

Butler *et al.* (2011) tested the efficacy of adapting this method for the treatment of separation-related problem behaviours in eight dogs, with periods of absence by each dog's owner acting as the phobia-eliciting stimulus. In the study, the owners were instructed to gradually increase the duration of their absence from their dogs in five-minute increments, until eventually they could leave for longer periods without their dogs exhibiting any problem behaviours. Results were determined through the owner's subjective rating of the behaviours. The study found that systematic desensitisation was successful in reducing both the severity and the frequency of separation-related problem behaviours for all eight dogs (Butler *et al*., 2011). Although these results are promising, further studies will need to be done using greater sample sizes to confirm this as a valuable method for the treatment of anxiety disorders in dogs.

Kato *et al.* (2012) further explored reduction of anxiety-related behaviour in dogs by evaluating the effect of a diet supplemented with alpha-casozepine and tryptophan. Alpha-casozepine is a natural biological compound found in bovine milk that mimics the effects of gamma-aminobutyric acid, a neurotransmitter that has inhibitory effects on anxiety and stress-related disorders (Kato *et al*., 2012). Tryptophan is an amino acid that is the precursor for serotonin and has been linked to the regulation of behaviour issues such as mood, aggression, and susceptibility to anxiety (Leathwood, 1987; Koopmans *et al*., 2005; Kato *et al*., 2012).

The study analysed the effect of the supplemented diet by measuring the dogs' urine cortisol concentrations as well as their scores on the standardised Canine Behavioural Assessment and Research Questionnaire (C-BARQ), which is designed to assess the prevalence and severity of behaviour problems in dogs as reported by their owners (Kato *et al*., 2012). The concentration of urinary cortisol is a known physiological marker of stress or anxiety in animals, and is a common non-invasive method for quantifying stress responses (Beerda *et al*., 1998; Kato *et al*., 2012). Kato *et al*.

(2012) compared urine cortisol concentrations as well as the prevalence of problem behaviours for 28 dogs in a single-blind crossover trial after eight weeks on both the control diet of no supplements and the study diet with alpha-casozepine and tryptophan supplements. Urine was collected and compared from a post-stressor environment (2 hours after a visit to a veterinary hospital to have their toenails clipped) and pre-stressor (in the home environment). The study found that the supplemented diet was effective in reducing anxiety-related behaviour (Kato *et al*., 2012). The use of a supplemented diet would also be a practical and valuable method when used in combination with behaviour modification.

The initial trigger for anxiety-related behaviours in most dogs is unknown, although traumatising separation events are often thought to contribute (Butler *et al*., 2011). A key traumatising event could be the early removal of young puppies from their litter and dam. As seen in a study done by Pierantoni *et al.* (2011), early separation can result in behaviour problems later in life. Owner-reported problem behaviours were significantly higher in a group of 70 adult dogs that had been separated from their litter between the ages of 30 to 40 days when compared to another group of 70 adult dogs that had been separated from their litter at the age of 60 days.

The correlation between early separation and behaviour problems is likely due to the fact that the puppies are being removed from their litters during their key socialisation period, a time during which social and environmental behaviour patterns are established (Pierantoni *et al.*, 2011). Pierantoni *et al.* (2011) found that the negative experience of removing puppies from their litters prematurely can result in long-lasting behavioural changes and provide a basis for many adult behaviour problems.

Conclusions

Behaviour problems in domestic dogs greatly increase their risk of abandonment, relinquishment to a shelter, or euthanasia (Pierantoni *et al.*, 2011; Butler *et al*., 2011). Therefore, treatment to prevent or reduce the prevalence of these behaviours will improve the welfare of these dogs. The behaviour-modification method of systematic desensitisation was effective for the treatment of problem behaviours in dogs with anxiety disorders by Butler *et al*. (2011). Kato *et al*. (2012) also found that the dietary supplements alpha-casozepine and tryptophan were effective in reducing problem behaviours in anxious dogs. However, Pierantoni *et al*. (2011) noted that if a puppy is allowed to stay with its litter and dam until at least eight weeks of age, then problem behaviours are less likely to develop.

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