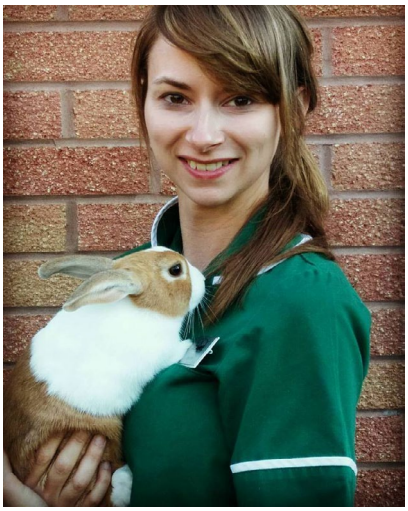

Stephanie Almond RVN, DipAVN (small animal)

Stephanie graduated from Hartpury College in 2013 with a BSc (Hons) degree in Veterinary Nursing Science and passed the RCVS Advanced Diploma in 2017. She has worked in a number of small animal practices and recently started at Langford Veterinary Hospital. Stephanie has a particular interest in the care of hospitalised patients as well as theatre, analgesia and anaesthesia.
Email: Sl_almond@yahoo.co.uk

Reducing stress in canine patients whilst hospitalised in a veterinary practice – a review part 1

Stephanie Almond RVN, DipAVN (small animal)

Langford Veterinary Hospital, Bristol BS40 5DU, UK

ABSTRACT: Being hospitalised is stressful for any canine patient and stress may be shown in physiological and behavioural responses (Druce, 2016), which may inadvertently increase wound healing time and immunosuppression (Scotney, 2010/2011). It is the job of the Registered Veterinary Nurse (RVN) to be able to recognise signs of stress and implement methods to reduce this. With a multitude of methods available, RVNs need to be able to adapt their care, assessing each individual and employing the method deemed most suitable.

Keywords: fearfulness; reducing stress; canine

Introduction

A veterinary clinic will see many dogs during a day for not just illnesses and disease but also for routine check-ups; each of these patients may show signs of stress in varying degrees which, as discussed by Druce (2016), is a normal response in preparing the patient for either fight or flight. If these patients have to then be admitted for any length of time to the hospital, this stress has the potential to increase further and result in negative associations and harmful body responses. A review by Nicholson and Meredith (2015) described how chronic stress may contribute to disease progression and have a negative effect on a patient's welfare. The hormones involved in stress, adrenaline and cortisol, stimulate a shift in immunity which increases vulnerability to infections, increases blood glucose levels and impedes wound healing, all resulting in potentially longer stays in the hospital and thus contributing to chronic stress responses.

Effects of stress

Hewson (2014c) discussed how reducing stress in cats appeared to be the focus of many veterinary practices, but highlighted that dogs are just as vulnerable to the effects of stress. RVNs play a large role in not only reducing but aiming to prevent this stress, which may not be immediately obvious (Hewson, 2014b). Hewson (2014a) explained how patients may cope passively with behavioural inhibition by not urinating or eating within the hospital; this in turn could result in further stress to the patient when interventions are needed by staff such as tube feeding or passing a urinary catheter. Hewson (2014a) described how other patients may freeze and be unwilling to cooperate or move, while another group may actively respond showing signs of aggression, barking, chewing or pacing. Concurrently, human hospitals are encouraging doctors and nurses to aid their patients in reducing stress when visiting hospitals by listening to music and utilising aromatherapy (Hur, Song, Lee, & Soo Lee, 2014), which both have the potential to be incorporated in veterinary patients.

Stress may alter physiological levels including raising blood pressure, temperature, respiratory rate and heart rate as well as altering blood parameters, giving rise to potentially inaccurate blood test results (Williams, 2016). Williams (2016) explained how neutrophilia may be seen as a response to stress. Adrenaline release

DOI: 10.1080/17415349.2017.1406318

is associated with a mature neutrophilia which could be mistaken for an inflammatory response in the patient, leading to a potential incorrect diagnosis. Methods to minimise stress therefore not only aid in improving a patient's well-being, but aid in a correct diagnosis when conducting diagnostic testing.

Use of aromatherapy

A range of studies exist on aromatherapy use which relies on the body absorbing the essential oils via the skin or olfactory system (Hur et al., 2014). A review study conducted by Hur et al. (2014) looked at the use of aromatherapy in reducing stress in people over a number of studies conducted from 2001 to 2011. It established that aromatherapy did appear to be effective in reducing stress levels, but many of the studies were biased, and it was noted that the review study by Hur et al. (2014) was limited in size and quality so recommended further research. Franco et al. (2016) produced a study involving 93 individuals analysing the use of lavender fleur oil and its use in reducing anxiety before surgery; bias was reduced by having a randomised control group with unscented oil. The study disagreed with that of Hur et al. (2014): no difference in vital signs were recorded between the two groups when completing an anxiety survey – both the unscented and lavender oil groups showed statistically significant decreases in negative attitudes and improved a patient's sense of well-being. This therefore suggests the use of oils in people has a psychological effect rather than a physiological effect. Animals do not have the same understanding as humans so should be less biased if oils are used in studies to assess their effect on stress levels.

Bradshaw, Marchant, Meredith, and Broom (2008) measured stress levels via salivary cortisol in 40 pigs when lavender straw was used during transportation. Lavender was found to reduce symptoms of travel sickness but did not reduce levels of salivary cortisol or signs of stress. Other herbal supplements are being explored for their anti-anxiety properties, including valerian root (*Valeriana officinalis*), which Murphy, Kubin, Shepherd, and Ettinger (2010) explained, has active valerenic acid that interacts with the γ-amino butyric acid (GABA) system and mediates anxiolytic activity. The study conducted by Murphy et al. (2010) involved 50 rats assigned into five groups. Some were given ethanol as a control group, another diazepam which is used for its anxiolytic properties, the rest were given various dosages of valerian extract or valerenic acid. This study concluded that valerian root appeared to result in a significant reduction in anxious behaviour and thus could potentially be an effective alternative to traditional anxiolytics such as diazepam.

Use of valerian oil and synthetic pheromones

Unlike human subjects, animals are much less subjective in the test setting to psychological effects as they are unaware of what is being done; therefore, any reduction in stress levels when oils and aromatherapy are being used are potentially less subject to bias. Marley (2015) discussed a study involving valerian oil involving 244 canines whilst at a canine grooming salon: groomers were asked to use a valerian oil plug-in 30 minutes before a grooming session. In over 50% of cases this appeared to moderately improve a dog's behaviour and in over 30% it significantly improved the behaviour. This study supported the conclusion by Murphy et al. (2010) that valerian oil reduced anxiety, providing further evidence that this positive result is able to be replicated outside the laboratory setting. The results of a recent study conducted by Taylor and Madden (2016) disagreed with previous findings. This study involved 28 dogs in a double-blind placebo-controlled study where behavioural responses were recorded. The study is limited, however, in that only a small sample population is used, and also no physiological readings were taken from the study groups, therefore making all assessments subjective to the analyst.

Synthetic pheromone preparations are widely used in veterinary practice wards and waiting areas, appearing to reduce signs of stress and anxiety as discussed by Herron and Shreyer (2014). Synthetic pheromones are species-specific, working differently from products based on oils and herbs. Pheromones are chemicals produced and released by the body into the environment where their presence brings about a change in the physiology and behaviour of other individuals (Hewson, 2014b). Mills (2005) explained that pheromone production is concentrated in particular areas of the body including the perioral and cheek region in cats and ears in dogs, the foot pads which are often a source of alarm marking, the mammary region of females shortly after parturition which produce chemicals believed to help offspring orientate their surroundings as well as the perianal area and urogenital area.

Mills, Ramos, Estelles, and Hargrave (2006) conducted a triple-blind placebo study on the effect of synthetic pheromones on behaviour and anxiety by using independent raters to assess behaviour so bias was kept low to ensure reliable results. The study suggested the use of synthetic pheromones did aid in relaxation when in a clinical setting but had no effect on aggressive behaviour; the author acknowledged the study sample was small, involving 15 dogs, and that further study is required. Kim et al. (2010) went on to look at the effect of synthetic pheromones on signs of separation anxiety in hospitalised dogs. Twenty-four dogs were exposed to a synthetic pheromone diffuser in a double-blinded study and behaviour was assessed independently by four individuals to improve reliability. Kim et al. (2010) concluded that the use of synthetic pheromones did appear to reduce signs of anxiety by reducing signs of licking and pacing and improved how often a patient eliminated, supporting that of Mills et al. (2006).

More recently, Broach and Dunham (2016) produced a study within which 51 dogs underwent behavioural assessments to assess the effect of pheromone collars on stress-related behaviour and performance after being worn for four weeks. To improve reliability, candidates were randomly assigned either placebo collars or the treatment pheromone collar. Broach and Dunham (2016) came to a different conclusion than previous studies: the use of pheromone collars did not appear to reduce behavioural signs of stress. Although Broach and Dunham (2016) used a larger study than that of Mills et al. (2006) and Kim et al. (2010), the sample group is relatively small, therefore does not allow for true population generalisations to be made.

The effect of a synthetic pheromone collar was assessed in a study by Landsberg et al. (2015) in whether it reduced sound-induced fear and anxiety in a thunderstorm stimulation. Twenty-four canines were chosen, half of which received a placebo collar, a trained observer assessed each dog on a six-point scale for active, passive and global fear and anxiety. The study supported the findings of Mills et al. (2006) and Kim et al. (2010), the use of synthetic pheromone collars significantly decreased global fear and anxiety during and following exposure to the thunder recording. Those dogs with synthetic

pheromone collars also used the hide box provided more frequently than the placebo group, suggesting a combination of environment changes as well as use of the collar contributed to a reduction in signs of stress. In practice RVNs can utilise this knowledge by providing not just synthetic pheromones in the kennel area but also ensuring the patient has somewhere to hide away. The number of dogs used by Landsberg et al. (2015) was small compared to that of Broach and Dunham (2016), suggesting a larger study group would be beneficial to draw firmer conclusions from. A literature review produced by Frank et al. (2010) reported similar views on the quality and validity of studies involving synthetic pheromones, who concluded that many studies involving synthetic pheromones yielded insufficient evidence of the effectiveness in reducing signs of stress and anxiety therefore suggested extensive further research.

Conclusion

Understanding and measuring stress in patients whilst at a veterinary practice is of continued importance in ensuring patients receive the best care possible with limited negative experiences (Carter, 2014). Many studies exist surrounding the measuring of stress, it is vital veterinary practices ensure evidence based research is continuously discussed and assessed and where appropriate ideas are instigated to ensure gold standard care is delivered.

ORCID

Stephanie Almond http://orcid.org/0000-0002-4076-3307

References

Bradshaw, R. H., Marchant, J. N., Meredith, M. J., & Broom, D. M. (2008). Effects of lavender straw on stress and travel sickness in pigs. *The Journal of Alternative and Complementary Medicine, 4*(3), 271–275.

Broach, D., & Dunham, A. E. (2016). Evaluation of a pheromone collar on canine behaviors during transition from foster homes to a training kennel in juvenile Military Working Dogs. *Journal of Veterinary Behavior: Clinical Applications and Research, 14*, 41–51.

Carter, C. (2014). Reducing patient stress: Considerations for nurses. *Veterinary Nursing Journal, 29*(11), 362–364.

Druce, K. (2016). Reducing stress in isolated patients. *Veterinary Nursing Journal, 31*(7), 206–209.

Franco, L., Blanck, T. J. J., Dugan, K., Kilne, R., Shanmugam, G., Galotti, A., … Wajda, M. (2016) 'Both lavender fleur oil and unscented oil aromatherapy reduce preoperative anxiety in breast surgery patients: a randomized trial', *Journal of Clinical Anesthesia, 33*, 243 – 249.

Frank, D., Beauchamp, G. & Palestrini, C. (2010) 'Systematic review of the use of pheromones and treatment of undesirable behaviour in cats and dogs'. *Journal of the American Veterinary Medical Association, 236*(12), 1308–1316.

Herron, M. E., & Shreyer, T. (2014). The pet-friendly veterinary practice: A guide for practitioners. *Veterinary Clinics of North America: Small Animal Practice, 44*(3), 451–481.

Hewson, C. (2014a). Evidence-based approaches to reducing in-patient stress – Part 1: Why animals' sensory capacities make hospitalization stressful to them. *Veterinary Nursing Journal, 29*(4), 130–132.

Hewson, C. (2014b). Evidence-based approaches to reducing in-patient stress – Part 2: Synthetic pheromone preparations. *Veterinary Nursing Journal, 29*(6), 204–206.

Hewson, C. (2014c). Evidence-based approaches to reducing in-patient stress – Part 3: How to reduce in-patient stress. *Veterinary Nursing Journal, 29*(7), 234–236.

Hur, M. H., Song, J. A., Lee, J., & Soo Lee, M. (2014). Aromatherapy for stress reduction in healthy adults: A systematic review and meta-analysis of randomized clinical trials. *Maturitas, 79*, 262–369.

Kim, Y. M., Lee, J. K., Abd el-aty, A. M., Hwang, S. H., Lee, J. H., & Lee, S. M. (2010). Efficacy of dog-appeasing pheromone (DAP) for ameliorating separation-related behavioral signs in hospitalized dogs. *The Canadian Veterinary Journal, 51*(4), 380–384.

Landsberg, G. M., Beck, A., Lopez, A., Deniaud, M., Araujo, A., & Milgram, N. W. (2015). Dog-appeasing pheromone collars reduce sound-induced fear and anxiety in beagle dogs: A placebo-controlled study. *Veterinary Record, 177*(10). Retrieved October 5, 2016, from http://veterinaryrecord.bmj.com/content/177/10/260.full.pdf+html?sid=4a47027b-4674-481b-9749-b6119fa41a3b

Marley, S. (2015). *Dog groomer pet remedy survey results* (pp. 1–31). Torquay: Pet Remedy.

Mills, D. (2005). Pheromonatherapy: Theory and applications. *In Practice, 27*, 368–373.

Mills, D. S., Ramos, D., Estelles, M. G., & Hargrave, C. (2006). A triple blind placebo-controlled investigation into the assessment of the effect of Dog Appeasing Pheromone (DAP) on anxiety-related behaviour of problem dogs in the veterinary clinic. *Applied Animal Behaviour Science, 98*(1–2), 114–126.

Murphy, K., Kubin, Z. J., Shepherd, J. N., & Ettinger, R. H. (2010). *Valeriana officinalis* root extracts have potent anxiolytic effects in laboratory rats. *Phytomedicine, 17*(8–9), 674–678.

Nicholson, S. L., & Meredith, J. E. (2015). Should stress management be part of the clinical care provided to chronically ill dogs? *Journal of Veterinary Behavior, 10*, 489–495.

Scotney, R. L. (2010/2011). Environmental enrichment in veterinary practice. *The Veterinary Nurse, 1*(3), 140–149.

Taylor, S., & Madden, J. (2016). The effect of pet remedy on the behaviour of the domestic dog (*Canis familiaris*). *Animals, 6*(11), 64.

Williams, L. (2016). Cat handling and associated stress: A clinical nursing perspective. *Veterinary Nursing Journal, 31*(3), 88–93.