

Detection of Pain in the Domestic Cat

By Lai Yin Lilian Wong

Introduction

Freedom from pain is one of the five basic philosophies encompassed in the Farm Animal Welfare Council (FAWC) model of animal welfare (Webster, 2001). Despite the modern world now perceiving domestic cats (*Felis sylvestris catus*) as having evolved from the category of a “farm” animal to that of a companion animal (Rollin, 2007), the fundamental freedoms still apply. This paper examines recent discussions of pain assessment.

Discussion

Rollin (2007), in his recent paper, drew attention to the historical neglect by veterinarians of pain management in animals, including cats. He suggested that this was partly due to the very “science-based” nature of medical advances, where experiments are designed to obtain objectively measurable results, thus discouraging exploration into such subjective areas as levels of pain and suffering. In order to improve pain management, it is important to devise ways to measure pain itself.

A set of recommendations developed recently by the American Animal Hospital Association (AAHA) and the American Association of Feline Practitioners (AAFP) outlines similar views: while cats may not show obvious signs of pain, careful observation of changes in behaviour can assist in determining their levels of suffering (Hellyer *et al.*, 2007). In an attempt to identify such changes, a survey by Vaisanen *et al.* (2007) examined the immediate post-operative behaviour of 145 cats that had undergone elective ovariohysterectomy or castration. The owners were asked to complete a questionnaire describing the way and extent to which their cat deviated from normal behaviour for three days after the surgery. They were also asked to indicate, on a visual analog scale (in the form of a 100mm-line), the level of pain from which they believed their cat was suffering (scaled from no pain to extreme pain). Results showed that behavioural changes suggestive of pain manifests mainly as an altered posture or way of walking, and also in difficulty jumping. Decreased levels of general activity and increased hiding or withdrawal behaviour were also associated by owners with pain.

Although the study was compromised by factors such as the difference in surgical protocol and aftercare between individuals, it does serve as a starting point for further research into home monitoring of pain, allowing veterinarians to better advise clients on signs to look for. In order to verify that owner perception of their pet’s pain is indicative of actual pain, Lascelles *et al.* (2007) conducted a study on a number of cats with osteoarthritis. Candidate cats wore an activity monitor (AM) in the form of a small box on the collar. Owners brought the cat to the clinic at regular intervals over a number of weeks, where the cat was given either an analgesic (meloxicam), or a placebo that looked and smelled identical. Owners were then asked to complete an owner-directed questionnaire similar to that of the Vaisanen *et al.* (2007) study. Data from the AM and questionnaire were compared in the light of whether or not the analgesic was actually given. The results showed increased owner perception of animal pain when the animal was given a placebo, and also indicated a negative correlation between perception of pain and the animal’s activity levels. Assuming that cats in pain have decreased levels of activity (Vaisanen *et al.*, 2007), and that meloxicam provides pain relief in osteoarthritis (Lascelles *et al.*, 2007), this suggests that the use of an AM can help identify the presence of pain, and also that owners are capable of reliably detecting relative levels of pain in their animals. The finding, perhaps not surprising given that the human to pet bond can be very strong (Rollin, 2007), is that small changes in animal behaviour may possibly be clearly perceptible to the owner. However, when an animal is being treated in hospital, it is up to the nurses and veterinarians to detect signs of pain and discomfort. In post-operative procedures pain can be anticipated proportional to the amount of tissue damaged (Hellyer *et al.*, 2007), but for other causes of pain, detection may be difficult, particularly when cats hide responses as a protective mechanism (Hellyer *et al.*, 2007).

A more quantitative measure, such as that of plasma cortisol, could help remove the subjective component from research in this area. Indeed, nearly a decade ago Smith *et al.* (1999) demonstrated a negative correlation between administration of pain relief and cortisol concentrations. More recently,

Accorsi *et al.* (2008) have described successful cortisol determination from hair growth. In this study, an area of fur was clipped on the backs of 27 cats, and the same area re-clipped at the end of the sample period. The hair growth in the area during the sample period could thus be collected and analysed. During the same sample period, they also collected regular faecal samples for analysis. Cortisol concentrations found in the hair were charted against mean cortisol concentrations found in the faeces, and a positive correlation was observed. Since faecal cortisol concentrations is known to be useful in the measurement of stress levels (Cook *et al.*, 2000), hair cortisol concentrations can also be used to the same effect, with the advantage that it measures an average stress level over the sample period, and is unaffected by acute inducers of stress such as handling. Although this method has yet to be directly linked to relative levels of pain, it could in the future prove to be a means of assessing level of suffering caused by a chronic source.

Conclusion

In his article Rollin (2007) argues that modern owners may, in attempting to prolong an animal's life, paradoxically be prolonging its suffering and lowering its quality of life. In the interests of animal welfare, it is important that pain can be definitively assessed regardless of whether or not the cause can be treated. Recent research into determination of pain in cats can serve to help persuade owners in doing what is best for the animal, whether it be treating the cause of the symptom of pain, or providing euthanasia.

References

- Accorsi, P., Carloni, E., Valsecchi, P., Viggiani, R., Gamberoni, M., Tamanini, C., Seren, E. (2008) Cortisol determination in hair and faeces from domestic cats and dogs. *General and comparative endocrinology* 155 (2), 398-402.
- Cook, C., Mellor, D., Harris, P., Ingram, J., Matthews, L. (2000) Hands-on and hands-off measurements of stress. In: *The Biology of Animal Stress. Basic Principles and Implications for Animal Welfare*, CAB International, UK. pp.126-146.
- Hellyer, P., Rodan, I., Brunt, J., Downing, R., Hagedorn, J., Robertson, S. (2007) AAHA/AAFP Pain Management Guidelines for Dogs and Cats. *Journal of Feline Medicine and Surgery* 9 (6), 466-80.
- Lascelles, B., Hansen, B., Roe, S., DePuy, V., Thomson, A., Pierce, C., Smith, E., Rowinski, E. (2007) Evaluation of client-specific outcome measures and activity monitoring to measure pain relief in cats with osteoarthritis. *Journal of Veterinary Internal Medicine* 21 (3), 410-416.
- Rollin, B. (2007) Ethical issues in geriatric feline medicine. *Journal of Feline Medicine and Surgery* 9 (4), 326-334.
- Smith, J., Allen, S., Quandt, J. (1999) Changes in cortisol concentration in response to stress and postoperative pain in client-owned cats and correlation with objective clinical variables. *American Journal of Veterinary Research* 60 (4), 432-435.
- Vaisanen, M., Tuomikoski, S., Vainio, M. (2007) Behavioral alterations and severity of pain in cats recovering at home following elective ovariohysterectomy or castration. *Journal of the American Veterinary Medical Association* 231 (2), 236-42.
- Webster, A. (2001) Farm Animal Welfare: The Five Freedoms and the Free Market. *Veterinary Journal* 161, 229-237.