Chronic pain: a heterogenic disease – predictors, construct, challenges of measurement

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In 2014 Bell and others conducted a survey about veterinary surgeons' attitudes towards chronic pain in dogs. It identified osteoarthritis (OA), dental and aural disease, vertebral and spinal cord conditions, neoplasia and skin conditions as important causes of chronic pain in dogs. The major barriers to adequate treatment of chronic pain were reported as difficulties with pain assessment, expense of drugs, and difficulties with owner compliance. This survey illustrates that chronic pain is extremely common in dogs and the same is likely to be true in cats, with a diverse range of diseases associated with chronic pain. Traditionally the aetiology of chronic pain has been classified as either an inflammatory or neuropathic pain type, although this division is likely to be too simple with many chronic pain conditions having mixed aetiologies which can make treatment more challenging.

Pain from disease states is recognized to cause changes in the central and peripheral nervous systems that can either result in increased pain sensitivity (hyperalgesia, allodynia) or a loss of sensitivity (hypothesia). Previously these changes have been grouped under the term central sensitization, but the term algoplacticity is preferred because it reflects the fact that there can be loss or gain of function depending on the disease state. Chronic pain is also associated with changes in descending control systems, with a switch from a predominantly inhibitory pattern to a facilitatory pattern which amplifies the pain response. This is exemplified by deficiencies in conditioned pain modulation in people with chronic pain states.

In humans, as well as neurological factors affecting the perception of chronic pain, many other influences are important. For example, genetic factors are considered to be important in OA pain and psychological factors, such as depression and catastrophizing, play into the overall pain state. The role of these factors in animals has not been determined.

Measuring chronic pain and its effect on quality of life (QoL) is pivotal to being able to assess a response to analgesic treatment but remains challenging in dogs and

cats. Owners, who spend more time with their pets than the veterinary surgeon, are best placed to assess the severity of chronic pain in their animals but require education about what signs to look for. A number of different clinical metrology instruments have been developed and validated for owners to quantify chronic pain associated with OA in cats and dogs, and a company called Vetmetrica is validating tools to measure QoL. These can be extremely useful to aid decision making about analgesic interventions and the most appropriate time for euthanasia in veterinary patients.

KEY LEARNING OBJECTIVES

- Understand the pathophysiology of different types of chronic pain
- Know factors likely to affect the severity of chronic pain in animals
- Know what tools available to measure chronic pain in animals

MULTIPLE CHOICE QUESTIONS

1. What does the term algoplacticity mean?
 - (A) It refers to both the gain and loss in sensory function that occurs with chronic pain
 - (B) It refers to the gain in sensory function that occurs with chronic pain
 - (C) It refers to the loss in sensory function that occurs with chronic pain
 - (D) It refers to changes in the peripheral nervous system that occur with chronic pain
2. What is conditioned pain modulation?
 - (A) It is a measure of central sensitization in humans
 - (B) It is a measure of peripheral sensitization in humans
 - (C) It is a measure of chronic pain in humans
 - (D) It is a measure of the endogenous pain inhibitory pathway in humans
3. What is a clinical metrology instrument?
 - (A) It is a form of quantitative sensory testing used to measure chronic pain in animals
 - (B) It is a device used to measure pain sensitivity in animals
 - (C) It is a questionnaire that can be used to measure chronic pain in animals
 - (D) It is an instrument designed to measure central sensitization in animals