

Managing pain in cats: therapy methods for chronic cases

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ABSTRACT

Chronic pain is a life-altering condition that has significant impact on a cat's quality of life. Many cats with chronic pain have an underlying chronic disease that may be causing, or contributing to, their pain, while others may have persistent pain with no ongoing pathology or injury. Chronic pain is poorly defined, difficult to diagnose and challenging to treat. The cornerstones of therapy are client education, regular reassessment, weight control, appropriate exercise and managing underlying condition(s).

It is probable chronic pain affects a significant proportion of companion cats in the UK – particularly as they enter their senior years.

Pain is defined by the International Association for the Study of Pain (IASP) as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or is described in such terms”¹.

Chronic pain can be categorised by the underlying pain mechanism (inflammatory, neuropathic or, rarely, physiologic²⁻⁴) and most commonly defined as “pain that persists beyond tissue healing”⁴. Unfortunately, defining chronic pain in terms of tissue healing is inadequate, so it has also been described as pain that persists for more than three (or sometimes six) months, pain caused by non-healing and episodic pain that periodically remits and recurs⁵⁻⁷.

Abdominal pain states



Figure 1. A cat undergoing acupuncture as a part of its pain management. It is a common misconception cats are unsuitable candidates for acupuncture as many tolerate it very well. Acupuncture was an effective adjunct to buprenorphine and meloxicam treatment in this cat.

Chronic pain is a separate clinical entity to acute pain and should be considered as a disease state in its own right. Abnormal pain states, such as hyperalgesia and allodynia, are commonly encountered in chronic pain; these are a form of neuropathic pain and indicate maladaptation and nervous system dysfunction.

Hyperalgesia is the intensified pain experience of a usually painful stimulus – the stimulus would normally hurt, but the animal experiences a greater intensity of pain than usual. An example of this is bumping into the corner of a table – normally this would be moderately painful for a short time, but, in the face of hyperalgesia, would be excruciating.

Cats with hyperalgesia may display exaggerated pain responses to mild or moderately painful procedures, such as manipulation of a limb with degenerative joint disease (DJD) or intravenous cannulation. Hyperalgesia may be primary or secondary.

Primary hyperalgesia is due to peripheral sensitisation of the neurons by prostaglandins and other chemical mediators and occurs at the site of injury. Secondary hyperalgesia is due to central sensitisation of the spinal cord – particularly the dorsal horn – and occurs away from the site of injury (for example, pain over a healthy, contralateral limb).

Allodynia is the experience of a usually non-painful stimulus as painful. An example of this is pain caused by an item of clothing brushing an area of sunburned skin. Wearing a T-shirt is not painful, but with allodynia it may be agonising. Cats with allodynia may find gentle stroking or grooming painful.

Secondary hyperalgesia and allodynia are caused by central sensitisation. This occurs following repetitive or extremely intense stimuli and causes increased neuron excitability, recruitment of neurons not normally involved in pain signalling and altered expression of receptors,

neurotransmitters and neuromodulators²⁻⁹.

Defining and assessing

It has been well established physical changes to components of the CNS can persist after injury and prolong the pain experience beyond the healing time of the primary insult. This further confuses the definition of chronic pain as, if the CNS remains altered, has healing truly occurred?

The IASP recognises chronic pain syndromes and conditions that can be defined by each of the different definitions above and suggests “we must understand [chronic pain] slightly differently as a persistent pain that is not amenable, as a rule, to treatments based upon specific remedies, or to the routine methods of pain control, such as non-narcotic analgesics”⁵.

In addition to the difficulties in defining what constitutes chronic pain, it is exceedingly difficult to recognise and assess. In cats, humans and dogs, serial quality of life questionnaires (QoLQs) are considered gold standard for chronic pain recognition and assessment because the condition most frequently manifests in lifestyle changes, to accommodate the pain, with or without overt physical signs such as lameness^{4-6, 9-14}. An example of this is how cats with DJD most commonly present with reduced activity levels and reluctance to jump^{10, 15-17}, with only one in three showing gait abnormalities¹⁸.

Unfortunately, no validated QoLQs are available for use in cats, though several have been described for use in various conditions, including musculoskeletal pain, heart disease, diabetes mellitus and cancer-related pain^{10, 16, 19-23}.

In 2015, WSAVA’s global pain council produced its “[Guidelines for recognition, assessment and treatment of pain](#)” in the *Journal of Small Animal Practice* and recommends the following broad categories are used when assessing chronic pain in cats:

- general mobility (for example, ease of movement and fluidity of movement)
- performing activities (for example, playing, hunting, jumping, using a litter box)
- eating, drinking
- grooming (for example, scratching)
- resting/observing/relaxing (how well these activities can be enjoyed by the cat)
- social activities involving people and other pets
- temperament⁶

Table 1. Potential underlying causes of chronic pain in cats	
Postsurgical chronic pain	Pain of chronic disease
Thoracotomy, mastectomy, cholecystectomy, gynaecological laparotomy, hysterectomy, hip arthroplasty, dental procedures, postamputation pain	Degenerative joint disease, cancer, heart failure, renal failure, stomatitis/gingivitis, diabetes mellitus, interstitial cystitis, dermatitis
Neuropathic pain	Musculoskeletal pain
Trigeminal neuralgia (headshaking), intervertebral disc disease, postherpetic neuralgia, direct nerve damage, diabetic neuropathy, inflammatory neuropathy	Myofascial pain

This non-exhaustive list is compiled from a range of human and veterinary sources^{2, 4-8, 27}.

Table 1. Potential underlying causes of chronic pain in cats.

Using these categories, a QoLQ can be devised in conjunction with the owner – an owner-directed QoLQ. Lascelles et al successfully used an owner-directed QoLQ, in addition to a separate global QoLQ, in the serial assessment of chronic pain in cats caused by DJD before and after treatment with analgesics.

Discussion with the owner elicited five different activities they felt had changed the most, often including willingness to jump and activity level, and the deviation in these behaviours from normal was assessed¹¹. Lascelles and Robertson have an example of this owner-directed QoLQ on page 207 of their DJD review¹⁵.

As managing chronic pain is a long, challenging and often palliative process, it is important to establish a rapport with the owner.

Engaging owners in managing these cases from the outset facilitates this as it gives them ownership over how their pet is managed and shows willingness of veterinary professionals to listen and, more importantly, value owners' observations and opinions.

The incidence of chronic pain in cats is unknown and the broad and changeable nature and definition of chronic pain, combined with difficulties in recognition and assessment, present many challenges to its study. But it is reasonable to assume many causes of chronic pain in humans and other species may cause chronic pain in cats too (**Table 1**).

As in humans, it is probable the most common cause of chronic pain in companion cats is DJD. Radiographic evidence of DJD is present in 40% to 92% of cats, with the risk of DJD increasing by 13.6% per year of age²⁴. The elbow, hip, stifle, tarsus, thoracic spine and lumbosacral spine appear to be most commonly affected^{19, 24}.



Figure 2. The same cat asleep in its enriched crate following acupuncture. Out of frame, a small ramp has been fashioned to aid access to a litter tray and food, and water bowls are slightly raised off the floor.

However, while we do not know what proportion of joints with radiographic evidence of DJD are painful in cats, 34% of painful joints do not show radiographic evidence of DJD^{19, 24}. Other causes of chronic pain in cats include cancer pain, stomatitis, intervertebral disc disease, interstitial cystitis, dermatitis, diabetes mellitus, heart and renal failure, trauma and post-surgical pain^{2, 4, 6, 7}.

When chronic pain is diagnosed or suspected in a cat, the first steps in its management are to determine (if possible) the underlying cause(s) and to educate the client regarding chronic pain.

Part of this explanation should highlight treatment is rarely curative, in many cases chronic pain management is palliative and the degree of pain experienced by their cat may vary with “good” or “bad” days due to management, acute exacerbation and disease progression.

Owners of cats with chronic pain conditions must be counselled that treatment is likely to be lifelong and involve lifestyle changes, as well as medication. Clearly, the next steps are to treat and stabilise the underlying cause(s) while concurrently managing the pain.

For many chronic pain conditions the cornerstones of treatment are good weight control and appropriate exercise. Ensuring cats are lean, supple and strong gives their bodies the best platform for other treatments to springboard off. As in humans²⁵, this is particularly important when treating DJD pain, but will also facilitate control of other underlying diseases, such as diabetes mellitus and heart disease.

Next, there must be ongoing assessment, characterisation and treatment of the pain. In many cases the underlying disease process will help guide this assessment and characterisation. For example, inflammatory pain is anticipated in the presence of DJD or other intrinsically inflammatory conditions and, therefore, anti-inflammatory drugs, such as NSAIDs, are an appropriate choice of analgesic.

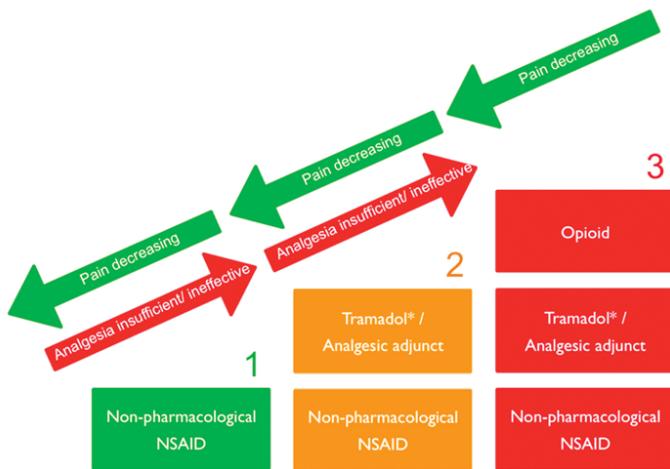


Figure 3. Treatment ladder for chronic pain in cats. Level 1 is the maintenance regime, generally comprising non-pharmacological management with NSAID therapy. As pain worsens, additional analgesics and analgesic adjuvants are administered in addition to the level 1 regime. When pain reduces from level 2 or 3, fewer analgesics are required and their administration is ceased. *Tramadol is not licensed for use in cats. IMAGE: Modified from the WHO palliative care: symptom management and end of life care interim guidelines 2004.

Cats with hyperalgesia or allodynia require analgesic adjuncts that reduce central sensitisation, such as gabapentin or amantadine, and should be administered alongside NSAIDs.

Aggressive, multimodal treatment may be required for several months before the neuropathic pain component is sufficiently controlled to allow normal petting, grooming and/or complementary therapies, such as acupuncture (**Figures 1 and 2**) and physiotherapy.

For severely affected cats, hospitalisation may be required to administer opioid analgesics (usually buprenorphine or methadone), in addition to NSAIDs and other analgesic adjuncts, until the pain is adequately controlled. Opioids may be necessary if the underlying condition deteriorates rapidly, but may also be required following an acute exacerbation.

The initial, aggressive, multimodal treatment of pain to achieve an acceptable pain state can then be followed by a period of tapering off some of the drugs, either by reducing the dose or weaning off some classes, until a maintenance regime is reached. This is called the reverse treatment pyramid.

Once a suitable maintenance regime has been found, the World Health Organization treatment ladder can be followed according to the clinical needs of the animal as its pain changes over time (**Figure 3**).

The treatment ladder is a useful concept for owners to understand – particularly as it emphasises

their cat's pain may change over time. It clearly shows there is a plan for what to do when it does change and indicates worsening of the pain state may be temporary.

A list of drugs and physical therapies used to treat chronic pain can be found in **Table 2** and the reader is referred elsewhere for the specifics of management^{2, 6, 7, 15, 24, 26, 28}.

Therapy	Rationale for use	
Non-pharmacological	Weight control	Maintaining an ideal body condition score reduces physiological stress and minimises abnormal load bearing through joints. May also improve control of concurrent disease.
	Appropriate exercise	Regular, appropriate exercise keeps the muscles supple and strong, enabling them to support the joints. May also improve control of concurrent disease.
	Multimodal environmental modification	Modifying the environment to enable normal interaction and expression of behaviours encourages exercise, mental stimulation and provides security and comfort. Particular care is taken to ensure access to favourite places, food, water and toileting areas.
	Acupuncture	CNS modulation aids in reducing central sensitisation. Direct myofascial effects provide local pain relief and treats secondary muscular pain. Release of endogenous opioids provides moderate to long-term analgesia. May modulate the immune response in some conditions.
	Physical therapies	Provide comfort through local effects. May stimulate tissue repair and aid healing.
	Surgery	Surgical salvage procedures may reduce/eliminate ongoing pain from the underlying condition(s) and in some instances may be curative.
Pharmacological	NSAIDs – eg meloxicam, robenacoxib, carprofen*	Reduce inflammation through reduce prostaglandin synthesis by cyclo-oxygenase enzyme inhibition. Treats inflammatory pain and aids in treatment of primary hyperalgesia. Meloxicam is the only NSAID with an indefinite follow-on licence in cats.
	Opioids – eg methadone, buprenorphine, fentanyl†, tramadol†, codeine*	Primarily centrally acting analgesia for moderate-severe pain. Methadone also provides some N-Methyl-D-aspartate (NMDA) antagonism that may be useful in reducing central sensitisation.
	Anti-epileptics – eg gabapentin*, pregabalin*	Reduce central sensitisation. Reduce CNS excitability.
	NMDA antagonists – eg ketamine*, amantadine*	Reduce central sensitisation. Reduce CNS excitability.
	Antidepressants – eg amitriptyline*, fluoxetine*	Reduce central sensitisation and enhance inhibitory modulation of pain. These drugs should not be administered concurrently with tramadol due to the risk of serotonin syndrome.
	Regional anaesthesia – eg lidocaine†, bupivacaine†, lidocaine patch†	Stop transmission of nerve signals from the desensitised region. Regional pain relief can be provided if the animal is hospitalised.
Nutraceutical [‡]	Joint diets	May reduce inflammation through omega 3, glucosamine and chondroitin supplementation.
	Nutraceuticals	Various effects. Most aim to reduce inflammation. Some may promote tissue repair – for example, polysulphated glycosaminoglycans may assist in improving bladder wall integrity in cats with interstitial cystitis. Care should be taken to ensure no potential drug interactions when using them.

*Not licensed for treatment of chronic pain in cats. †Licensing is not applicable. ‡Lidocaine preparations without adrenaline are unlicensed, but may be preferred depending on the technique.

Table 2. Treatment options and rationale for choice for chronic pain in cats^{2-4, 15, 27-28}.

Chronic pain is a separate clinical entity to acute pain and should be considered as a disease state. Many cats with chronic pain have an underlying chronic disease that may be causing or contributing to their pain, while others may have persistent pain with no ongoing pathology or injury.

Chronic pain is poorly defined, difficult to diagnose and challenging to treat, and the management of animals in chronic pain can be extremely dissatisfying and disheartening for owners and veterinary professionals alike.

Establishing a rapport with the owner and working alongside him or her to devise a plan for the management of the pet is crucial to the success of treatment.

The cornerstones of therapy are client education, regular reassessment, weight control, appropriate exercise and the management of any underlying condition(s).

- Please note some drugs mentioned in this article are not licensed for use in cats and are used under the cascade.

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