



Lameness and pain in dairy cows: does it hurt and does it matter?

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Summary

This paper will consider some aspects of the ethical debate and scientific evidence that contribute towards our now widely held belief that animals do suffer pain. It will look at the effects of pain in cattle and review an effective integrated approach to the management of pain associated with lameness and other health problems in dairy cattle. Further to this it will consider how the perceptions and attitudes of humans towards pain in animals influence their actions and the likelihood of them taking action to relieve suffering.

Introduction

The 18th century philosopher Jeremy Bentham said of animals "...the question is not, Can they reason? nor, Can they talk? but, Can they suffer?". This widely used quote from Bentham describes the view that it is not necessary to judge animals' abilities by our own standards, i.e. whether they have speech or sophisticated decision making capacities, but that we should be most concerned about how they feel and whether they themselves are alright. The International Association for the Study of Pain (IASP) definition outlines that; [pain is] "an unpleasant sensory and emotional experience associated with actual or potential tissue damage" (International Association for the Study of Pain, 1983). It is important to note that this definition recognizes that pain has an emotional as well as physical component; this implies that some level of consciousness is required to

fully experience pain in the way that humans do. Interestingly, despite the amount of value put on whether animals can have experiences akin to humans, it is only relatively recently that medical science has recognized that all adult humans experience pain to a similar degree regardless of race, gender and wealth. Even now the debate continues as to the levels of pain experienced by neonates. This uncertainty about whether neonates can experience pain illustrates the problem that we have to overcome when trying to understand whether non-human animals feel pain. It means that a) despite the obvious merit of exercising the precautionary principle it is still not standard practice in all neonatal care units to provide analgesia when dealing with poorly babies, and b) when examining the reason for this uncertainty about human neonates ability to suffer pain much of the problem seems to be that because young children cannot communicate



through language there is room for doubt as to their actual pain experiences.

In both humans and animals the apparent pain experience is not always consistent between individuals or with what might be expected. Severe fractures or wounds might be apparently pain free while what looks like the merest scratch may be reported or elicit behaviours akin to agony. In 1965 Melzack and Wall described seven inconsistencies in the behaviour of pain:

- The relationship between injury and pain is highly variable
- Innocuous stimuli may produce pain
- The location of pain may be different from the location of damage
- Pain may persist in the absence of injury or after healing
- The nature and location of pain changes with time
- Pain is not a single sensation but has many dimensions
- There is no adequate treatment for certain types of pain

While pain science gives us explanations, or at least partial explanations, for these inconsistencies dealing with the reality of this in a clinical situation, especially with non-verbal animals remains extremely challenging.

Evidence that cattle feel pain

The question of whether animals, in this case cattle, experience pain is clearly not straight forward to answer and a considerable weight of evidence has to be examined and considered

before reaching any conclusion. Firstly, for cattle to experience pain the underlying physiological mechanisms of pain, the receptors, nerves and neurochemicals that are activated by noxious stimuli, should be similar to those of humans; which indeed they are. Further to this, the behavioural responses of the cattle to noxious stimuli should closely mirror those of humans; which they do. However, some people have then questioned whether animals [cattle] might experience the sensations of pain without actually suffering (Iggo, 1984). This might suggest that cattle have insufficient cognitive ability to allow them to experience pain or to put it another way “they might be too stupid to feel pain”. Science continues to increase our knowledge about animal cognition and most who work in the field, while acknowledging that no definitive answers exist, point out that we have no proof that animals do not have subjective experiences; therefore the benefit of the doubt should be afforded to them (Nicol, 1996). To convince ourselves that cattle experience pain we might expect them to respond to the administration of analgesics, for example a lame cow should, as indeed it does, bear weight on the affected limb once it has received effective local anaesthesia. However, it should also show a change in what might be termed “quality of life”: This might take the form of either resting comfortably or alternatively becoming active and performing tasks, such as eating, which it was reluctant to do prior to receiving pain relief. The evidence for this is largely empirical but does exist. It appears when examining the available information that the balance tips towards the likelihood that cattle do



suffer pain and so we are ethically obliged to take steps to both prevent and properly manage their pain whenever possible.

Effects of pain and benefits of pain management

The term 'pain' is extremely generic and does not in itself convey the range of qualities of pain that may be experienced; stabbing, throbbing, burning, aching, grinding, piercing, radiating and tearing to name but a few. Cattle infected with Bovine digital dermatitis (BDD) show behaviours, repeated lifting and shaking of the affected limb, that seem to indicate that the lesion 'stings' under some circumstances. It is also notable that the IASP have also extended their descriptors of pain to include itching. In addition to the different qualities of pain, there is also a severity component which can range between unpleasant to down right intolerable for the sufferer. Pain also has ancillary effects that cause problems for both cattle and their carers.

Ancillary effects of pain include:

- Slowing down healing
- Causing a negative energy balance (at the very least through inappetance)
- Decreases in productivity
- Impairment of cardiovascular and respiratory function
- Aggressive behaviours
- Further associated problems (e.g. postural changes leading to muscle wastage or joint damage)

It is clear that pain in cattle is not only a serious animal welfare concern but that it should also be a cause of

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considerable management concern. The effective management of pain in cattle, using lameness as an example, can be divided into four phases (Whay, 2002):

- 1) **Recognition of pain:** Unless a painful clinical problem, for example lameness is detected no management action will follow. The earlier lameness is detected the more effective pain management will be. A study described by Whay and colleagues in 2002 (Whay et al. 2002) found that three out of four cases of lameness in UK dairy cattle were going unreported.
- 2) **Treatment:** Rapid and effective treatment will often immediately reduce suffering and will decrease the chances of chronic pain developing.
- 3) **Sympathetic care:** The chances of a full and quick recovery will be greatly increased by providing the cow with an environment in which she can rest comfortably, eat easily without having to compete for food and where she does not have to walk long distances [especially over rough or difficult walking surfaces]. Again the quicker and more complete the recovery the greater the likelihood of avoiding long-term complications and chronic pain.
- 4) **Analgesia:** Using drugs to interrupt or modulate the pain experienced by cattle will promote recovery, reduce the risk of prolonged suffering and limit production losses.

Effective pain management requires an integration of these approaches and should not rely on one single element;



for example administration of analgesics without effective treatment. There is research evidence that lame cattle benefit significantly from the receiving the aspirin-like Non-Steroidal Anti-Inflammatory Drug (NSAID) ketoprofen when it is given in association with effective lesion treatment (Whay et al. 2005) and that these combined approaches can also promote recovery of milk yield (O'Callaghan-Lowe, 2004). However, as Flower and co-workers (Flower, 2008) demonstrated in Canada, when a NSAID is given without associated treatment of the cause of lameness an improvement in gait is detected but to a very minor degree, reinforcing the message that a multilateral approach to pain management is required.

In the example of mastitis in dairy cattle, there seems to be a consensus of opinion that severe cases of mastitis cause 'significant' pain and distress to the affected animals (Hewson et al. 2007). However moderate to mild cases of mastitis still present challenges in terms of early recognition of the disease and recognition that there is associated pain. Signs of pain associated with mastitis in cattle such as altered stance, and higher heart rates, respiratory rates and rectal temperatures (Fitzpatrick et al. 2000) may also be indicators of the disease process itself, making clear cut recognition of pain difficult. In addition, the use of NSAID's for the treatment of severe endotoxic mastitis is normal practice, as the anti-endotoxic effects of NSAID's are well documented. However, this practice has perhaps deflected attention from the value of NSAID's in providing analgesia for cows with mastitis. Furthermore, veterinary practitioners

are not always directly involved in the treatment of moderate and mild cases of clinical mastitis. There is however increasing evidence that NSAID's do provide pain relieving benefits in cases of moderate severity mastitis (for example see Milne et al. 2004).

The influence of human attitudes towards cattle pain

How individuals, veterinary surgeons, farmers and herdspeople respond to pain in the cattle under their care is likely to be influenced by a number of factors. These include their beliefs about whether or not cattle feel pain, their own personal attitudes to and experiences of pain and what they believe they or others around them can do to manage it. In a survey of UK veterinary surgeons, Huxley & Whay (2006) found that cattle practitioners varied considerably in their estimates of the levels of pain associated with a range of conditions and procedures. As has been previously reported, in most cases women rated pain higher than men. However, most importantly and regardless of gender, a practitioner's perception of pain severity influenced their likelihood of giving analgesics; those that perceived pain to be more severe were more likely to give pain relief in more cases. In addition, 65% of practitioners surveyed reported a belief that farmers would not be willing to pay for analgesics as a barrier to their use. Interestingly, in a corresponding survey of farmers 53% agreed with the statement "Veterinary surgeons do not discuss controlling pain in cattle with farmers enough" (Huxley and Whay, 2007). While this is clearly not an open mandate for veterinary surgeons to prescribe analgesics for cattle it does suggest that they should not assume



that all farmers will be unwilling to pay for them.

Concluding remarks

The challenge of pain is that for all individuals it is a private experience. Humans overcome this by using language as well as behavior to convey how they feel and the extent of their suffering. Animals do not have the facility of describing their pain to us which means that, although they

cannot be accused of exaggerating, we sometimes take this as leave to assume that they are not hurting. As yet no definitive answer can be given as to whether animals feel pain in a manner and intensity comparable to humans, however, the weight of evidence suggests that they do suffer and that they also benefit greatly from receiving the best treatment that we can offer them.

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