Welfare implications of dehorning

Livestock owners and veterinarians recognize that some people consider dehorning offensive. Nonetheless, dehorned cattle create a safer workplace for herd mates, handlers and workers a benefit that outweighs the short period of discomfort at dehorning time.

1. All methods of physical dehorning cause pain and side effects.
2. Young calves recover quicker and have fewer complications than older calves.
3. There is no evidence to show young calves experience less pain than older calves.
4. Local anesthesia prior to dehorning eliminates acute pain for a few hours after dehorning.
5. Local anesthesia combined with a sedative and an analgesic (pain reliever), may provide the best pain relief.
6. Dehorning without anesthesia is inhumane and unethical.
7. Use of pain relief is an additional cost for producers. Pain relief may be limited by the availability of drugs for farmers to use and the scarcity of veterinarians in farm animal practice.

Schwartzkopf-Genswein et al.'s 2005 findings strongly indicate that pain is a major cause of distress in animals undergoing dehorning. Much less is known about the pain due to dehorning and how this might be reduced. However, considerable research has now shown that all methods of dehorning cause pain to calves (Stafford and Mellor, 2005). Local blocks help control the pain, but it is now clear that use of local anesthetic alone does not fully mitigate the pain. For example, local anesthetic does not provide adequate post-operative pain relief. The most popular local anesthetic, lidocaine, is effective for two to three hours after administration, and calves treated with local anesthetic actually experience higher plasma cortisol levels than untreated animals after the local anesthetic loses its effectiveness (Stafford and Mellor, 2005). However, use of non-steroidal anti-inflammatory drugs (such as ketoprofen), in addition to a local anesthetic, can keep plasma cortisol and behavioral responses close to baseline levels in the hours that follow dehorning.

A second consideration is that animals respond to both the pain of the procedure and to the physical restraint. Calves dehorned using a local anesthetic still require restraint, and calves must also be restrained while the local anesthetic is administered. The use of a sedative (such as xylazine) can essentially eliminate calf responses to the administration of the local anesthetic and the need for physical restraint during the administration of the local anesthetic and during dehorning (Grondahl-Nielsen et al., 1999). Thus a combination of sedative, local anesthetic and a non-steroidal anti-inflammatory drug reduces the response to the pain both during dehorning and in the hours that follow. Unfortunately, such a combination of treatments may be impractical for farmers and may itself have drawbacks for the animal. For example, an effective local block requires repeated injections (around the cornual nerve within the occipital groove of each eye and a ring block around each horn bud) that are themselves painful. One common alternative to hot-iron dehorning is using caustic paste to cause a chemical burn. This method of dehorning is still painful for the calves, (Morisse et al., 1995) but this pain is easier to control (Vickers et al., 2005). Calves treated with only the sedative xylazine showed no immediate response to application of the paste, and little response in the hours that followed.

This research shows how methods of pain treatment can be developed that is both effective and practical for use on farm. Vickers et al. (2005) compared behavioural responses of calves to hot-iron and caustic paste dehorning using sedation (xylazine), with and without local anaesthesia (lidocaine). Calves dehorned with hot-iron, sedation and local anaesthesia showed significantly more pain-related behaviour (i.e., head rubs, head shakes and transitions) in the initial four hours than those chemically dehorned and sedated. No significant effect was found of dehorning method upon frequency of observed distress behaviours during the period five to twelve hours post dehorning. Vickers et al. (2005) claim that their findings indicate that chemical dehorning is less painful than hot-iron dehorning. Theoretical and methodological inconsistencies in the study, however, raise questions regarding the validity of this assumption.

Conclusion

Pain associated with calf castration and dehorning is an important welfare issue for farms animals. Research outlined in this paper has provided valuable information regarding associated animal distress. Dehorning at a young age minimizes hazards to the calf, the cow-calf producer, and the feedlot owner. Horn buds of younger calves are typically removed using caustic paste or a hot iron, but the latter is more commonly used on dairy calves. There is good evidence that both methods are painful.