Dehorning dairy calves

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Horn buds of young dairy calves are normally removed to reduce the risk of injuries to farm workers or other cattle that can be caused by horns. It is generally recommended that dehorning be done when the calf is less than 3 months of age (e.g. Agriculture Canada, 1990). The developing horns of calves 3 months of age or older are normally removed surgically using a number of techniques (e.g. scooping, shearing and sawing), and physiological responses indicate that these procedures are painful (Sylvester et al., 1998). Horn buds of younger calves are typically removed using a caustic paste or a hot iron. There is again good evidence that both methods are painful (Morisse et al., 1995), but the latter is more commonly used on dairy calves.

Even when the procedure is carried out at an early age, hot-iron dehorning causes a pronounced behavioural response such that significant physical restraint is necessary to carry out the procedure. Increased levels of circulating corticosteroids are commonly detected after dehorning (Boandl et al., 1989; McMeekan et al., 1998b; Morisse et al., 1995; Petrie et al., 1996; Wohlt et al., 1994). Administration of a local analgesic dampens the initial increase in plasma cortisol. Local analgesics also reduce behaviours associated with the immediate pain response (e.g. tail wagging, head movements, tripping and rearing) and those indicative of post-operative pain (head rubbing, head shaking and ear flicking) (Graf and Senn, 1999; McMeekan et al., 1999; Morisse et al., 1995; Sylvester et al., 1998).

Although it is now well established that local anaesthetics are effective in reducing the immediate pain response after dehorning, the use of local anaesthetic alone is unsatisfactory on at least two counts. The first of these is that calves respond to both the pain of the procedure and to the physical restraint. Calves dehorned using a local anaesthetic still require restraint, and the difference in the behavioral response between treated and untreated calves can be sufficiently subtle that it is difficult for observers to be certain if adequate nerve blockage was achieved. Calves must also be restrained while the local anaesthetic is administered, as well as during the actual dehorning. Thus calves experience the distress associated with restraint on two occasions, and still may not receive an adequate nerve block. The use of a sedative (such as xylazine) can essentially eliminate calf response to the administration of the local anaesthetic and the need for physical restraint during the administration of the local anaesthetic and during dehorning (Grøndahl-Nielsen et al., 1999).

A second unsatisfactory aspect is that local anaesthetic does not provide adequate post-operative pain relief. The most popular local anaesthetic, lidocaine, is effective for only 2 to 3 h after administration (McMeekan et al., 1998a; b). Indeed, the results of recent studies indicate that local anaesthetic treated calves actually experience higher plasma cortisol levels than untreated animals after the local anaesthetic loses its effectiveness (Graf and Senn, 1999; McMeekan et al., 1998a; b; Petrie et al., 1996). However, the use of non-steroidal anti-inflammatory drugs (such as ketoprofen), in addition to a local anaesthetic, can keep plasma cortisol and behavioural responses close to baseline levels in the hours that follow dehorning (McMeekan et al., 1998b; 1999; Faulkner & Weary, 2000).

We therefore recommend that dairy producers, in consultation with their veterinarian, consider a combination of all three treatments (i.e. a sedative, local anaesthetic, and a non-steroidal anti-inflammatory) for calves being dehorned. The use of a sedative allows for careful administration of the local anaesthetic, with no response by the calf. The combination of sedative and local anaesthetic allows for dehorning with no immediate pain response. The combination of sedative, local anaesthetic and a non-steroidal anti-inflammatory drug reduces the response to the pain both during dehorning and in the hours that follow. For information and recommendations

regarding dehorning beef catlle, please see the article Dehorning Beef Cattle Via Genetics Is Welfare Friendly.

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