Dealing with Downers

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Abstract

"Down cattle" are non-ambulatory cattle that cannot stand or walk without assistance. Down cattle present welfare, food safety and economic problems to the cattle industry. Decisions must be made quickly to either care for non-ambulatory livestock properly or to humanely euthanize them. USDA estimated that approximately 200,000 down cattle were presented to slaughter facilities in the US in 2003, and that almost 5% of dairy cattle became non-ambulatory in 2005. Causes are injuries related to dystocia, infectious diseases (toxic mastitis, toxic metritis, lymphoma, peritonitis, septicemia) and metabolic disorders (hypocalcemia, hypomagnesmia, hypophosphatemia, hypokalemia, acidosis). If the animal is suffering and the pain or distress cannot be controlled or is not likely to be controlled quickly, the animal should be euthanized. Treatment includes nursing care that provides comfortable bedding, shelter, food and water, and protection from other cattle and wildlife as well as medical care. Down cattle can be moved on sleds, belts or carefully in tractor buckets, but should not be dragged except in emergency situations. Non-ambulatory cattle cannot be left without water, feed and shelter. Public health issues involve increasing pathogen loads (salmonella, *E. coli*, and Bovine Spongiform Encephalopathy (BSE)) and tissue residues at slaughter. Current USDA rules curtail the slaughter of down cattle in the US. Economic costs relate to replacement, treatment and nursing care, and potential effects on milk and meat markets (consumer acceptance); 77% of consumers polled replied that they found it unacceptable that downed animals were used for food.

Résumé

Les bovins « à terre » ou « *downer* » sont des bovins non ambulatoires qui ne peuvent se tenir debout ou se déplacer sans aide. Les bovins à terre occasionnent des problèmes à l'industrie sur les plans économique, du bien-être animal et de la salubrité des aliments. Le bétail non ambulatoire nécessite une réponse rapide : soit des soins appropriés, soit une euthanasie la plus humaine possible. Le département de l'Agriculture des États-Unis (USDA) estime qu'environ 200 000 bovins à terre ont été envoyés à l'abattoir dans ce pays en 2003 et qu'environ 5 % des bovins laitiers américains sont devenus non ambulatoires en 2005. Les causes de ce problème sont les blessures liées à la dystocie, aux maladies infectieuses (mammite et métrite toxiques, lymphome, péritonite, septicémie) et aux troubles métaboliques (hypocalcémie, hypomagnésie, hypophosphatémie, hypokalémie, acidose). Si l'animal souffre et qu'on ne peut rapidement apaiser sa douleur ou sa détresse, ou qu'on a peu de chances de l'apaiser rapidement, l'animal doit être euthanasié. Le traitement d'un animal à terre comprend l'apport d'une litière et d'un abri confortables, d'eau et de nourriture, la protection contre les autres bovins et les animaux sauvages, ainsi que des soins vétérinaires. On peut déplacer un animal ne se levant pas sur un chariot ou un transporteur à courroie, ou délicatement dans la pelle du tracteur, mais on ne peut le traîner, sauf en situation urgente. De même, on ne peut laisser ces bovins non ambulatoires sans eau, sans nourriture ou sans abri. Du point de vue de la santé publique, il faut tenir compte de la charge pathogène croissante (salmonelles, *E. coli* et encéphalopathie spongiforme bovine, ou ESB) et des résidus de tissus à l'abattoir. Aux États-Unis, les règlements de l'USDA imposent actuellement des contraintes à l'abattage des bovins couchés. Sur le plan financier, le problème des bovins couchés a des conséquences financières : coûts de remplacement, de traitement et de soins, effets potentiels sur le marché du lait et de la viande (acceptation par le consommateur). En effet, dans un sondage, 77 % des consommateurs ont répondu trouver inacceptable d'utiliser les animaux à terre pour la consommation humaine.

Introduction

"Down cattle" are non-ambulatory cattle that cannot stand or walk without assistance. Dr. Bernard Roland has stated that downed cattle are "a major welfare problem in the cattle business".[2] Down cattle present welfare, food safety and economic problems to the cattle industry. It is in the best interest of the cattle industry to prevent non-ambulatory animals and, when they do happen, to make a decision to either care for them properly or to humanely euthanize them. Cattle of all ages become non-ambulatory, but replacement stock are at low risk and do not present the livestock industry with the issues associated with down adult

cattle because they are not as large as adults. This discussion focuses on non-ambulatory adult cattle, although the welfare, food safety and economic concerns hold true for calves as well.

Defining the Problem

Solid data related to causes and numbers do not currently exist. The USDA is in the process of finishing an interview survey of the US dairy industry that will provide some national and regional data. Information available now is limited or anecdotal. It is apparent that dairy cattle are much more at risk than beef cattle for becoming non-ambulatory. The USDA estimated that approximately 200,000 down cattle were presented to slaughter facilities in the US in 2003, or about 0.5% of 36 million cattle processed (C. Stull, personal communication). Current USDA estimates from the 2005 survey report suggest almost 5% of dairy cattle become non-ambulatory per year. Dr. Pam Hullinger conducted an unreported survey in a single California abattoir for the year 1996-1997, and found the following: there were 519 down cattle, with an incidence rate of 0.01%; 91% were dairy cattle, only 9% beef cattle; and 40% of the down cattle passed USDA inspection and entered the food chain (P. Hullinger, personal communication).

Causes of Down Cattle

Causes of down cattle probably vary by region, herd size and herd management. The major categories of causes for non-ambulatory cattle are injuries related to dystocia (nerve damage, muscle and ligament damage), other injuries (fractures, muscle and ligament damage, "slip and fall" from estrus behavior or poor footing), infectious diseases (toxic mastitis, toxic metritis, lymphoma, peritonitis, septicemia) and metabolic disorders (hypocalcemia, hypomagnesmia, hypophosphatemia, hypokalemia, acidosis).

Dr. John Maas conducted a necropsy and farm interview survey of 50 down cows presented to slaughter at an abattoir in southern California in 1995. The data has not been published, but was presented at the 1996 Livestock Conservation Institute meeting. The data is presented in Table 1.

Diagnosis and Prognosis

Once an adult bovine has become non-ambulatory, it is imperative to assess the case and make a tentative diagnosis and prognosis. Diagnosis is difficult due to the size of the animals, limiting effective manipulation of legs and muscles, and the overlap of clinical signs from various diseases. Many practitioners approach down cattle diagnosis with the four "M's" in mind: mastitis, metritis, musculoskeletal and metabolic. Careful examination and evaluation of each case with respect to these areas can often result in a diagnosis, but many remain undiagnosed. Detailed descriptions for diagnostics can be found elsewhere.

The prognosis for the animal is very important because it will determine if treatment and nursing care is warranted, or if the animal should be humanely euthanized. If the animal is suffering and the pain or distress cannot be controlled or is not likely to be controlled quickly, the animal should be euthanized. Acceptable euthanasia methods can be found in the AABP (Table 2) and AVMA recommendations on euthanasia, and include pentobarbital, captive bolt and gunshot. Use of agents such as potassium to stop the heart must only be used after the animal is definitely unconscious. The method of euthanasia and carcass disposal may be affected by local regulations and rendering plant requirements.

There are welfare problems associated with pain and suffering of the animals from the causes of the non-ambulatory condition, the nursing care provided and transportation while non-ambulatory. The suffering (pain and distress) of the animal must be considered early in each case.

Treatment Management

Basic initial treatment for non-ambulatory cattle includes nursing care that provides comfortable bedding, shelter, food and water, and protection from other cattle and wildlife as well as medical care. Down cattle can be moved on sleds, belts or carefully in tractor buckets. Down livestock should not be dragged except in emergency situations. California has a specific law prohibiting dragging down cattle during transportation. Down cattle must be kept out of the sun, rain and elements, and maintained separately from other cattle so that

Table 1. Necropsy findings and outcome of 50 down dairy cows presented to slaughter in southern California.[a]

Diagnosis	No. cows	No. condemned
Injury	19	1
Calving paralysis	12	3
Mastitis	6	3
Lymphosarcoma	5	4
Metritis	2	—
Other[b]	5	—
Unknown	1	—

[a]Presented by Dr. C. Stull at the 1996 Livestock Conservation Institute annual meeting.
[b]Pneumonia, gastroenteritis, LDA, septicemia

Table 2. AABP Position Statement on Disabled Livestock

The AABP recommends that disabled livestock be handled humanely in all situations.

- Ambulatory Animals

  If an otherwise healthy animal has been recently injured, and the animal is ambulatory, it should be treated, shipped directly to a state or federally inspected slaughter plant, humanely slaughtered on the farm (where state laws permit) or euthanatized. Injured ambulatory animals should not be commingled with other animals during transport.

  Care should be taken during loading, unloading, and handling of these animals to prevent further injury or stress.

- Non-ambulatory Animals

  Non-ambulatory animals must not be dragged while alive.*

  If an animal is down on a farm

  If the animal is not in extreme distress and continues to eat and drink, the producer should contact a veterinarian for assistance and provide food, water, shelter, and appropriate nursing care to keep the animal comfortable.

  If the animal is in extreme distress and the condition is obviously irreversible, the animal should be euthanatized immediately or humanely slaughtered on the farm (where state laws permit).

  If an animal is down at a non-terminal market (e.g., sale yard or auction)

  If the animal is not in extreme distress, but is disabled, treatment measures should be initiated. If and when it becomes apparent the animal will not recover, it should be euthanized.*

  If the animal is in extreme distress or the condition is obviously irreversible, the animal should be euthanized immediately.

  If the animal is down at a terminal market (e.g., slaughterhouse or packing plant)

  The animal should be euthanized immediately.

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*Additions approved by Board action on recommendation of the AABP Animal Welfare Committee, September 2005

water and feed is truly available to them. Non-ambulatory cattle cannot be left without water, feed and shelter.

Medical treatment decisions about pain management, prognosis, withdrawal times and final disposition of the animal must be made. In the US, pain can be controlled with anti-inflammatory drugs such as flunixin, aspirin or dexamethasone. More severe pain, such as from fractures, may require extra-label use of analgesic drugs or euthanasia. Many rendering companies in the US will not accept animals treated with or euthanized with barbiturates because of the possible effect on pet foods made from the rendered materials. There is also concern that wildlife may feed on carcasses of animals receiving barbituates. Specific medical treatment is determined by the clinical signs and diagnosis for each case, and will not be presented in detail in this paper.

The weight of down cattle compromises blood flow in muscle tissues, and can result in secondary muscle and nerve damage from tissue compression. Compartmentalization syndrome (also called pressure damage and crush syndrome) is the local tissue damage resulting from pressure build-up in an osteo-facial compartment. Muscle damage from compartmentalization syndrome can have systemic effects including renal damage, cardiac arrhythmias from hyperkalemia and elevated creatinine kinase levels. The systemic effects of muscle damage are referred to as crush syndrome.[1] Down cattle must therefore be provided soft bedding, and attempts must be made to decrease the effects of compartmentalization or crush syndrome. This can be accomplished by several methods: rolling the animal from side-to-side every two hours can relieve circulation and tissue pressure; supporting the animal from a sling for a few hours; or supporting the animal in a water bath. The use of slings or hip-lifts can be beneficial, but care must be taken to avoid damage to the pelvis or skin. Water baths must be kept at body temperature, and the animal removed every six to eight hours. Cattle down in acute situations often cannot stand due to local pain, and some assistance during standing or lifting from a sling or hip-lift can help them stand and can facilitate recovery.

Public Health Concerns

Although extremely rare in the US, public health issues associated with non-ambulatory cattle include increasing pathogen loads and tissue residues at slaugh-

ter. Pathogens associated with down cattle include salmonella, *E. coli*, and Bovine Spongiform Encephalopathy (BSE). Waterman found an increased recovery rate for salmonella from down cattle in slaughter plants.[3] The European Union has reported that non-ambulatory cattle are at higher risk of having BSE than ambulatory cattle, and consequently the USDA has used down cattle for the primary surveillance of BSE in the US. After diagnosing BSE in a cow in the US, USDA published a ruling in January 2004 that requires all non-ambulatory cattle presented for slaughter to be condemned. This ruling effectively curtailed transport of down cattle to slaughter in the US.

Economics of Down Cattle

Economic issues related to down cattle involve the cost to the farm to replace the animal, costs for treatment and nursing care, and potential effects on milk and meat markets (consumer acceptance). Dr. Hullinger, in the 1997 abattoir survey, determined that 40% of down cows presented to the plant passed inspection, and 60% were condemned. Down cattle typically have considerable bruising, and therefore have less prime cuts and require more trimming than ambulatory cattle; non-ambulatory cattle therefore have less value at the slaughter house. Dr. Hullinger estimated that farmers received about $28.70 from the slaughter house for each down animal presented, factoring in the condemnation rate and the low value for those passed through inspection.

Farm Sanctuary sponsored a poll of consumers in 2003 (Zogby International Poll) and found that 77% of consumers polled replied that they found it unacceptable that downed animals were used for food. If down cattle were allowed to enter the food chain in the US, this could jeopardize market share for livestock products and still result in very little return to the producer.

Conclusions

Non-ambulatory cattle create welfare, food safety and economic problems for livestock producers. Veterinarians should help their clients understand these issues and provide assistance and training to prevent non-ambulatory cattle. Proper movement, treatment and care when they do occur is essential, and humane euthanasia of animals that are suffering is often the most appropriate management.

References

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