Livestock Production

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Hardware Disease

My mother always told me to stop eating like a pig. In fact, my eating pattern most closely resembled that of a cow. Cattle take large mouthfuls of food and often swallow without any chewing. This indiscriminate eating pattern predisposes cattle to a disorder commonly called hardware disease. If you have cattle eventually one of them will experience this disease.

Definition

Hardware disease is caused when a bovine ingests a relatively heavy and sharp object. The object falls to the floor of the rumen and is pushed forward into the reticulum. The reticulum is one of the compartments in the bovine stomach, and its function is not well understood. However, the contractions of the reticulum force the object into the peritoneal cavity where it initiates inflammation.

Signs

Signs of hardware disease will vary depending on where the object penetrates. The consistent signs as you might imagine are pain and inappetence. The animal may stand with an arched back or be reluctant to walk. Often you can hear a "grunt" when the animal is forced to walk. If the object penetrates close to the heart and migrates forward, an often fatal infection will result. Occasionally the inflammation will irritate the vagus nerve. This nerve controls rumen contractions and inflammation around the vagus disrupts this function. The result of an impaired vagus nerve is bloat, noted especially on the upper left side, and fluid accumulation on the lower right. One other sign that may be present is an obvious pulse seen in the jugular groove.

Diagnosis

Diagnosis is made based on observation of any combination of the above clinical signs. Since many other diseases can present with these signs, it is no easy task to be 100 percent sure. A "withers test" is done by squeezing the cow's backbone just above the withers. If the animal forcibly grunts, then the pain can be localized to the front half of the cow. Play the odds and assume hardware disease. X-ray has been used in hospitals with equipment large enough to penetrate the thorax of the patient. Also, metal detectors have been utilized. The obvious drawback to both of these techniques is that not all heavy sharp objects will be metal or be of sufficient density to show on an x-ray.
Treatment

Since it is often impossible to be sure of the diagnosis, a prudent approach would be to conservatively treat as if the cow has hardware disease. This would involve placing a magnet in her forestomach and hoping that it too finds its way to the reticulum. In the absence of rumen contractions, this may not occur. Even if the animal already has had a magnet placed within, it would be prudent to administer a second one when hardware cannot be ruled out. Secondly, a broad-spectrum antibiotic should be administered to control infection. Confinement of the animal will buy time so that the stomach can wall off the hole created in the stomach. Cattle with extensive infection in the abdomen or in the heart have a very poor prognosis. These cattle will die of starvation despite any attempt to encourage feed intake. Certain cases will respond only to surgery and physical removal of the object. If the peritonitis can be controlled after the object is removed the prognosis is good for these cattle.

Prevention

Prevention of hardware disease in cattle revolves around managing animal feed and animal areas so they avoid ingestion of heavy sharp objects. Magnets are typically installed in feed mills and forage harvesting equipment. These are not 100 percent effective. Barbed wire fencing, staples and roofing nails are often incriminated in hardware disease cases. Occasionally, heavy plastic items will cause hardware disease. These cases are especially frustrating as a magnet will not stabilize the migration of the object. The bovine's eating habit cannot be altered and prevention of sharp objects in the feed is not entirely possible; therefore, prophylactic insertion of a magnet at an early age is a good idea. Metal that is ingested will find its way to the magnet and be prevented from working its way through the stomach wall. Just remember that if enough metal is ingested the magnet will "fill up." Administer a second magnet if signs resembling hardware disease are present. Magnets sell for $2 to $5. (even cheaper if you recover them at a slaughter house); surgery will cost at least $100. and you put the price tag on the death of a three-year-old cow with many more calves to raise.