Buckeye Poisoning

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One day one of my colleagues from West Virginia informed me he had consulted Mr. Webster and found that a buckeye was a smooth, bald nut of no economic value. As Will Rogers would have said, this isn't necessarily so.

In the fall of the year, when the buckeye tree sheds its nuts, we find that it is toxic to cattle. We see a condition in southeastern Ohio which for the want of a better name we refer to as buckeye poisoning. This is a condition which I imagine is confined primarily to the Appalachian states because that's about the only place that the buckeye tree grows.

For the sake of brevity, we will confine these few comments to the conditions we see in the bovine. As stated, we refer to this as buckeye poisoning, but it is more a type of intoxication because, in the early stages of the condition, the animal staggers and stumbles and acts very much like it is intoxicated. In fact, the older practitioners tell me that 30-40 years ago, the only differential diagnosis you had to make with buckeye poisoning was to be sure the steer hadn't gotten into the mash barrel. It does very much resemble a straight intoxication. In the later stages of the condition these cattle will be down, unable to rise, there is a stiffness in the muscles of locomotion, and they are constipated and will usually show signs of bloat. This most often is from being in lateral recumbency and unable to regurgitate. I imagine in other parts of the country you see similar conditions from local weeds or plants. In southeastern Ohio and the Appalachian foothills for many years, they used methylene blue solution administered intravenously which gave rather poor results as an antidote. More recently, we have switched to a 30% thiosulfate solution given at the rate of 5 cc per 100 lbs. I.V. This is usually accompanied by an injectable laxative such as cascara preparation, 20-25 cc given subcutaneously. We then put them to sleep by giving them a general surgical anesthetic. The product of choice is one of these combinations with the pentobarbital chloralhydrate and magnesium sulphate, dose it to effect until the animal is completely asleep. Until recently, tranquilizers were of little or no value in treating these animals with drugs such as Dyquil, Sparene, or Acepromazine, but results with the newer tranquilizers in treating buckeye poisoning are better. This is about the only place in my bovine practice that I will still use mineral oil. Give mineral oil to the animal, not so much for the bloat problem but to coat the lining of the intestinal tract and reduce the absorption of the toxin or the alkaloid which is present in the buckeye. If you don't administer something to coat the lining of the GI tract, as soon as he gets a drink of water, he's like a wino–he'll be right back down again tomorrow. We usually prop these animals up in the normal position, then go off and leave them for two or three hours. When the anesthetic wears off, they rise and are able to walk. We instruct the owner to confine them to the barn or a corral and keep water away from them for 12-24 hours. If any of you in other parts of the country are seeing buckeye poisoning or a similar condition, I would appreciate talking to you here.

Teat Lesions and the Milking Machine

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The following are some problems encountered in trying to deal with a herd which has had bouts with chronic fibrous teat-end lesions in its lactating cows, and the causative factors which seemed to go along with these lesions.

Owners of a hundred milking cow herd contacted our clinic approximately one and one-half years ago complaining of cattle that would not enter the parlor. In addition, there was an increased incidence of clinical mastitis, along with what they felt was a shocking sensation to themselves in the parlor pit. This herd had been dropping approximately 50 to 100 lbs. per month for four to six months. Its rolling herd average was approximately 15,300 lbs. of milk and 560 lbs. of butter fat. A call to the power company and visit by their representatives revealed, upon touching any of the metal parts, a voltage leak of approximately 15 volts AC in the parlor. As it turned out, the power company had stepped up the voltage of a nearby power line from 24 to 48 thousand volts and was having some serious leakage due to improper grounding of a transformer. Additional grounds were put on the transformer. This made life more tolerable in the parlor, but still the cows did not enter the parlor readily and had to be driven in with each change of cattle.

The parlor is a double four with a two-inch looped low line. Cows are fed grain in the parlor and are fed hay and ensilage outside. There is a separate area for dry cows and heifers. During the summer months the cattle have access to a five-acre pasture.

Milking preparation consisted of washing the udders with a hose, wiping with a sanitizing solution of aqueous iodine on a common sponge, followed by application of the milker. After milking, an iodine-based teat dip, Bovadine®, was applied. A dynamic test of the milking system was performed, revealing a milk-to-rest ratio of 80:20 with a pulsation rate of 65 per minute. An attempt was made to alter the milk-to-rest ratio by ordering a new master pulsator cam and grinding it so as to obtain an approximate milk-to-rest ratio of 65:35. Some improvement was noted in the clinical mastitis problem. Also, the breaker cups were changed to a larger capacity so as to decrease flooding of milk at the teat ends. The problems seemed to diminish for a period of four months. At that time the vacuum pump motor burned out and was replaced with a 5 hp. motor from a 3

hp. motor. Things continued to improve for a month and the new pump decreased milking time by over one-half hour. Shortly thereafter problems began to develop. As many as six or seven new cases of mastitis were beginning to develop daily, the cows were again refusing to come in, and production was dropping at the rate of 50 to 100 pounds per month on the DHIA test rolling herd average. From a high of 15,400 lbs. of milk and 560 lbs. of butterfat to a low of 15,200 lbs. of milk and 523 lbs. of butterfat, the farmers were, needless to say, very concerned. An alarming number of fresh cows were developing raised round scabs and lesions at the teat orifices. These were not just older cows, but nearly 80% of the fresh heifers as well. It became necessary to leave the milkers on some cows for as long as 10 to 12 minutes in order to milk them out. Herd milking time went from under three hours to over four hours. No cows wanted to enter the parlor. Dynamic examination of the system at this time indicated still-flooding breaker cups, adequate vacuum capacity (at 10 CFM/unit ASME standard), and a voltage defferential of 2.5 VDC between the parlor stall pipes and the floor grating. A decision was made to change the milking system in the following areas: 1) Pulsation rate changed from 65 to 45 per minute, 2) Change from single to alternating pulsations, 3) Change milk-to-rest ratio from 80:20 to 55:45, 4) Increase breaker cup size, 5) Change shells and liners, 6) Change vacuum regulator from slide weight to spring diaphragm type, 7) Change teat dip from Iodine to Quarternary Ammonium with lanolin base, and 8) Grounded parlor gates. These changes seemed to work remarkable results within two days. The cows began to enter the parlor voluntarily and within four weeks most of the severe teat lesions were substantially healed. Roughly a dozen cows would not milk out from one quarter. These shut off completely and necessitated hand milking, keeping milking time at around four hours. Attempts were made to try new shells and liners to correct the problem. Square-bore vented liners were used which had no effect in ameliorating the problem. Next, two-piece ring-type stretch liners and shells were used which helped but did not correct the problem completely. Culling of a few of the more troublesome cows did solve part of the problem. Seven-piece shell and ring-type stretch vented liners were then installed, and the problem was substantially relieved.

The herd average began to increase each month, reaching a level of 15,770 lbs. and 588 lbs. butterfat within five months. In late August and early September we received 14 inches of rain in as many days. There was a repeat of the previous problems. Cows would not enter the parlor, teat-end lesions redeveloped, and there was an increase in the incidence of clinical mastitis. A check of the milking system revealed broken ground wires to the grates and very dirty pulsator air inlet filters. Cleaning of the filters, addition of a protective dome to the pulsators to keep out parlor grain dust, and regrounding of the parlor grating with cables corrected the problems within two days. Those cows with the fibrous teat lesions took several weeks to heal. At present the herd average is still rising each month and the lesions are at a minimum.

In conclusion, there are many factors felt to play a role in teat-end lesions. Researchers at the University of Minnesota have attempted to correlate them with viral infections of the bovine herpes mamillitis group, irritating teat dips, and improperly functioning milking equipment. Their results were inconclusive. My own feelings from experiences with this herd are that a virus problem may well exist, but it takes some exciting factors to bring the lesions about.

My suggestions to anyone encountering this type of a herd problem are that they must make an extremely thorough examination of the milking equipment and procedures. Oftentimes, the etiology of a problem such as this is very obscure and difficult to elucidate. One of your most valuable tools, in addition to good dynamic evaluation equipment, is the telephone. There is no substitute for consultation with those who have had experience in milking-machine consulting. There are a number of people whom I consulted on the problems I have reported, without whose advice and counsel the problems could not have been rectified. I owe a special thanks to Dr. James A. Jarrett, Dr. Nelson Philpot, and Mr. George Purlmutter, whose combined wisdom was of incalculable assistance.

Other practice tips:

I modified a Spotton Grub Remover gun sold by Haver Lockhart for infusions by the addition of an IV tube tip glued in the end. A heavier spring was added to the handle. It has worked well for over six months. Occasionally the O-rings must be replaced.

In dealing with dystocias where the head is just out of reach, I pump in one half to one gallon of mineral oil. A device from Dr. Jorgensen labs can be used to pass the chain around the fetus neck. A similar homemade device can be made from aluminum splint rod by looping the ends and bending the six-inch center portion.

On a posterior presentation, where the calf seems to be coming unduly hard, a fork handle inserted just anterior to, and under the calf's pelvis, and over the anterior brim of the dam's pelvis, then elevated during a straight pull back with the fetal extractor, has greatly reduced the pressure required to relieve the stifle lock. A noticeable "pop" occurs and the fetus slips two to three inches outward. Remove the handle and pull the calf. An excellent paper on management of dystocias was presented at the 1975 AVMA convention in Anaheim, California, by W. Duane Micklesen from Washington State University.

We have used a device in the reduction of an everted uterus which is relatively simple to make and quite convenient to use. It consists of two wooden pear-shaped plugs which are affixed by two 14-inch pieces of 3/8 inch steel rod inbedded in the smaller ends. They are joined in the center by a small pipe

union. Insertion of this device in the distal portion of an everted uterus with the back end against one's chest facilitates reduction of an edematous uterus without putting a hand through it. This greatly eases the chore of completely inverting the uterus once it is back inside the abdomen.

I have found that with an increasing number of requests to talk to 4-H and farmers' groups, visual aids are a great help in making points and illustrating pathology. By carrying a camera and a few lenses in the practice vehicle at all times, pictures of cases are taken that would otherwise be left unphotographed. I carry my camera, lenses, and a rechargeable flash unit in a small, sturdy, and dust-proof case. It keeps the equipment safe and ready for use at any time. In arranging the slides, I first view them on an old X-ray viewer and then store them in a 20-slide plastic sheet available from 20th Century Plastics, Inc., 3628 Crenshaw Blvd., L.A., California 90016. These sheets can then be put in any notebook where all slides are ready for quick previewing and assembly for a showing. The slides are thus kept dust-free, dry, and out of harmful light rays.

Record Keeping to Improve Bovine Reproduction

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Many of us spend a great deal of time doing pregnancy and sterility checking of cows. It can be a very satisfying and rewarding part of bovine practice, but let's face it, it's just not the most appealing part of practice. To get the most out of the procedure, a good system of recording the information you obtain should be developed.

The system should be easily used yet provide records so that both you and the owner or herdsman can tell at a glance when to dry a cow up or if the cow is a problem and should be rechecked. We have all probably developed the ideal system, but it can't be used in all dairies. If the owner or herdsman will not spend the time to use your system, then you must vary it or utilize something different to get the needed information recorded.

I would like to talk about the various systems that are utilized in our practice. The first system is merely a masonite or hardboard sign over each cow to record facts about her. Some of these are home creations and some are adaptations of signs that bull-studs have available for individual identification. This method is most often utilized in our practice where natural service is used and accurate breeding dates are not always available. This system can give you a limited amount of information, but not general health records or previous lactation history to see if she has been a problem breeder before.

The dairyherd monitoring wheel is not utilized by a lot of our herds but some people do like it and will spend the necessary time to use it. It does require some time to keep it accurate and most often must be used with some other written record such as a notebook to record the information needed for problem cows or from lactation to lactation.

A manila folder type record, developed by Michigan, is a very good system to record in detail almost all of the lifetime history of an individual cow. There are areas for breeding, calving, production, mastitis treatment, reproductive problems and other disease problems to be recorded. Also, with the use of color tabs on the top edge, you can mark months for calving, drying off, or when to watch for heat. The information may be somewhat harder to retrieve quickly, but it is there for the dairyman who will spend the time to put it there.

This last system is the one we use most often since it is easy to use and has room to record all the necessary information on each individual cow. This card can record four lactations so prior breeding history about the breeding cycles of the animal can be examined. By using the color tabs, various categories of cows can be marked, such as pregnant animals, cows ready to be bred, and cows to be checked postpartum. This system, except for the cards, is purchased from Acme Visible Index in either 38- or 60-pocket sizes.

As nice as these last systems look, I can show you some that are covered with dust and cobwebs because they are never touched. I'm sure that many of you have other systems that fit the needs of you and your clients. No matter what the system, the most important thing is that it be used.

(Several 2x2 slides were used to illustrate this presentation.)

Some Instruments for a Dairy Practice

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I wish to present to you three instruments that have been useful in our practice, which consists of family dairy farms of 50 to 100 cows.

The first is a vacuum gauge to which three rubber hoses may be attached. A rubber hose with a 16 gauge needle can be inserted into the inflation to observe the vacuum stability at the teat end. Next a rubber hose without the needle may be placed on the milking cluster in place of the short pulsator hose to observe the pulsator action. A slightly larger diameter hose, the narrow end of an inflaton, may be attached to the vacuum gauge and this used on a stall cock to check for vacuum line restrictions and check the accuracy of the milking machine vacuum gauge. We use this instrument as a survey tool while on the farm for a sick call. If our findings indicate a possible machine-related mastitis problem, we return later with more sophisticated equipment.

Some of our dairymen raise registered bulls to sell and often we are called to place a ring in their noses.