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BOVINE SPONGIFORM ENCEPHALOPATHY: WHAT'S THE LATEST?

With the recent news that Canada has confirmed a case of Bovine Spongiform Encephalopathy (BSE) or what the news media insist on calling "mad cow disease", I thought it would be important to review this topic. The US border with Canada was immediately closed to the shipment of live cattle and beef products. This is an absolutely necessary step and until much more is known about the risk of BSE in Canadian cattle, the border should remain closed. Although BSE has been recognized for more than 15 years as a devastating disease of cattle, until the Canadian case, it was off the radar screen for most people. Here is a quick review of the problem.

I don't Remember! What is Bovine Spongiform Encephalopathy (BSE)?

BSE is a chronic degenerative disease that affects the central nervous system (brain & spinal cord) of cattle, first diagnosed in cattle in Great Britain in 1986. BSE belongs to a group of diseases known as Transmissible Spongiform Encephalopathies (TSEs). The TSEs include scrapie (sheep & goats), transmissible mink encephalopathy, feline spongiform encephalopathy (cats), chronic wasting disease of elk and deer, and BSE in cattle. Humans have a number of TSEs and these include kuru, Creutzfeldt Jakob Disease (CJD), new variant Creutzfeldt Jakob Disease (nvCJD), Fatal Familial Insomnia, Gerstmann-Straussler syndrome (in humans). The TSEs appear to be caused by abnormal proteins or "prions". The clinical signs or symptoms in cattle appear as nervousness or aggression, abnormal posture, incoordination, weight loss, difficulty rising, progressing to death. There is no treatment for any of these conditions and currently there are no vaccines available for prevention. Remember, BSE is different from Foot and Mouth Disease (FMD; a viral disease of cattle, sheep, and pigs). Both BSE and FMD occurred in Great Britain, but that was the only connection between the two diseases.

Have we had any cases of BSE in the United States?

No. There have been no cases of BSE in the U.S.A. There was one case in Canada (which was in a cow imported from Britain), before the recent case of BSE in a single beef cow. Before the ban on British cattle imports went into effect in 1989, there were 499 cattle brought to the U.S.A. from Britain. All of those cattle were carefully accounted for and none showed evidence of BSE. Veterinarians and others in the U.S.A. have very aggressive surveillance programs for BSE. This includes the National Veterinary Services Laboratory in Ames, Iowa, the Centers for Disease Control, the USDA, and all state labs such as the California Animal Health and Food Safety laboratory. Surveillance of high-risk populations such as disabled dairy cattle has continued at a high rate, with more than 3,000 cattle from California alone examined for evidence of BSE to date. So far, there has been no evidence of BSE in the U.S.A.

What about BSE in Japan?

There have been a few cases of BSE diagnosed in Japanese cattle in the past three years. The Japanese continued to import meat and bone meal (MBM) from high risk sources (Europe) and unknown sources as cattle feed despite scientific warnings to the contrary. It is thought that this risky practice is what resulted in BSE cases occurring in Japan. These BSE cases in cattle destroyed Japanese consumer confidence in beef products, which has not yet fully recovered.

What is currently being done to prevent BSE in the U.S.A.?

The U.S.A. has banned importation of cattle and ruminant protein feeds from countries with BSE for many years and this ban is still in place (this now includes Canada). Surveillance in the U.S.A. continues at a very high rate. Also, in 1997 the FDA enacted a ruminant feed ban. The ban prohibits the feeding of protein derived from mammals (such as meat and bone meal) to ruminants. There are some exceptions to this rule, but in general it is very strict and effective. Some TSEs occur in the U.S.A. These include diseases such as scrapie in sheep, chronic wasting disease (CWD) in elk and deer, and transmissible encephalopathy in mink. Monitoring of all of these TSEs is occurring and active research is also ongoing on these conditions. There has been a large increase in the efforts to eliminate scrapie in sheep. New, more accurate diagnostic tests in sheep have been developed and the scrapie elimination program is proceeding. Research work on CWD is ongoing and many efforts to monitor CWD are occurring. To date, several research projects have concluded that CWD does not appear to cause disease in cattle. Currently, there is no known risk to the cattle population of the U.S.A. with regard to BSE and there is no risk to people consuming beef produced in the U.S.A. Obviously, this problem has decimated the cattle industries of the U.K. and other countries, and we must all continue to work hard to prevent this problem from occurring in the U.S.A.

How well is the mammalian protein ban working?

In general, the ban on feeding mammalian protein to cattle (or other ruminants) is working very well despite the news reports out of Texas a couple of years ago. The cattle industry recently received an update from the FDA on this question. The FDA has inspected 7,972 feed mills. The number of feed mills handling mammalian protein (meat and bone meal, and similar substances) was only 1,426 (21%). These are the feed mills that produce feed for poultry or swine operations. Currently, the use of mammalian protein for use in poultry and swine feeds is allowed, as these species are not affected by BSE or other TSEs. The number of mills handling these prohibited materials is declining. The number of significant problems uncovered during these inspections was less than 1%. Also, the FDA has inspected 2,007 ruminant feeding operations and there were no significant problems found and only 4 operations needed to improve their record keeping systems. There is still some education needed regarding the ruminant feed ban. The proper cleaning of equipment and better record keeping will be necessary to achieve 100% compliance. Also, the FDA is considering some possible changes to the BSE rule.

These include (1) prohibiting the use of Central Nervous System tissue (CNS; brain and spinal column) in rendered products, (2) prohibiting the use of poultry litter as cattle or sheep feed (poultry litter contains small amounts of poultry feed that may have a small percentage of ruminant meat and bone meal), (3) a pet food caution statement if they contain ruminant meat and bone meal, (4) ending the "plate waste" exemption (currently restaurant wastes can be rendered and potentially fed back to animals), and (5) more stringent rules on cross contamination in feed mills.

How is BSE recognized or diagnosed?

BSE cannot be confirmed in the live animal. It has signs similar to rabies, polioencephalomalacia, *Hemophilus somnus* infection, and a number of other common diseases. The microscopic examination of brain tissue is the only way BSE can currently be diagnosed. There is no "live animal test" for BSE; however, research work is continuing on this topic. A live animal test that could identify an "infected" animal well before it becomes ill would be particularly valuable.

Why does BSE continue to be important?

If a BSE case were to occur in the U.S.A. it would be economically and politically devastating to the cattle industry. This problem needs to be avoided, period! The regulatory agencies and producer groups need to aggressively monitor all regulations and bans. Producers need to support efforts by their state and national associations to ensure that science-based policies on cattle health and food safety are implemented. This support should include volunteer efforts and membership support. The CCA and the NCBA have been very proactive on this issue. By treating this issue seriously U.S. producers will avoid the problems that have occurred in Europe, Japan, Canada and other countries.

John Maas, DVM, MS
Diplomate, ACVN & ACVIM
Extension Veterinarian
School of Veterinary Medicine
University of California, Davis