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Anthony H. Andrews
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COMMENTARY

Bovine Spongiform Encephalopathy
Statement of Possible Relation With
New Variant Creutzfeldt–Jakob Disease:
Effects on the Welfare
of United Kingdom Cattle

Anthony H. Andrews
General Farm Animal Veterinary Consultant

Although measures to control bovine spongiform encephalopathy (BSE) had been in force in the United Kingdom for many years and had resulted in a marked decline in clinical cases, the announcement by the Secretary of State for Health on March 20, 1996, that a new variant form of Creutzfeldt–Jakob Disease may be linked with exposure to BSE, resulted in the introduction of several new control measures. These measures included a scheme banning human consumption of meat from cattle who were more than 30 months old (the so-called “over 30-month scheme;” OTMS), a subsidy for slaughter of calves, and additional inspections of abattoirs. The altered slaughter procedures and lack of rendering facilities meant an initial backlog of OTMS animals having to remain on farms. This placed pressures on accommodation and feed stocks, the latter being in short supply because of a poor grass growth the previous summer. Initially, the long delay before the removal of casualty animals from the farm resulted in increased summer mastitis problems for nonlactating cows. The export of calves to the European Union for veal production was banned, thereby allowing the cessation of a previously legal trade that was considered distasteful by many members of the general public. Financial concerns disturbed and continue to disturb affected farmers.

Requests for reprints should be sent to Anthony H. Andrews, Acorn House, 25, Mardley Hill, Welwyn, Hertfordshire, AL6 0TT, England.
The disease of bovine spongiform encephalopathy (BSE) first became known to the veterinary profession in the United Kingdom following its diagnosis in English dairy cattle in November of 1986. The problem began with only small numbers affected, but these numbers steadily rose, and the disease becoming notifiable in June 1988. Measures were then taken to prevent possible transmission back to cattle by the banning of the use of ruminant-derived protein in ruminant feeds. Should there have been any risk to the general public, they were protected by the slaughter and disposal by incineration (after a few initial burials) of all suspected BSE cases. This protection was supplemented in November 1989 by a ban on the use of certain offals thought to be of risk from cattle who were more than 6 months old and meant for human consumption.

The numbers of BSE-affected cattle steadily increased and reached their peak in early 1993, before starting to fall. Subsequently, there has been a marked decrease, indicating the success of the control measures in preventing further infection of animals. The problem was, and still is, that there is no satisfactory test to detect infection in the live animal before or when signs develop. In addition, the incubation period in cattle is long, usually about 5 years, and so the consequences of any control measures take a long time to show their effect. In the case of humans, the equivalent disease is Creutzfeldt–Jakob Disease (CJD), which was reported and defined in 1936 and for which there is, again, no suitable test prior to symptoms being displayed. Diagnosis is mainly made on the signs being expressed and, possibly, in the later stages, by an invasive brain biopsy. The incubation period of CJD, as with other human spongiform encephalopathies (e.g., Kuru), is very long.

REPORT OF nvCJD OCCURRENCE

Although BSE had been transmitted both naturally and experimentally to many species of mammals, until 1996 there was no official indication that the disease could be transmitted to human beings. Thus, at a time when the disease was markedly declining in the cattle population and the potential end of the epidemic was in sight, the Secretary of State for Health made a statement to the House of Commons on March 20, 1996. The statement indicated that cases of a new form of CJD had been found in a number of people younger than the usual age for onset of CJD and it contained 24 dramatic words: “While there is no direct evidence of a link … the most likely explanation is that these cases may be linked to exposure to BSE.” This came as a severe blow to British consumers and the agricultural industry, as well as Europe and the rest of the world. This announcement resulted in the almost complete cessation in the sale of beef from slaughterhouses and shops, and in the collapse of the beef market. Subsequently, research work has indicated that there probably is a link between new variant CJD and BSE.
NEW MEASURES TO PROTECT THE CONSUMER

The next few days and months saw the introduction of a series of measures, mainly of a political nature, to raise the consumers' confidence in meat, to stabilize the beef market, and reduce, still further, any risk of meat consumers coming into contact with beef from BSE-infected cattle. The measures included banning human consumption of meat from so-called “over thirty-month scheme” (OTMS) cattle. It also included a subsidy for the slaughter of calves and additional inspections of abattoirs. Subsequently, in 1997, a so-called “cohort slaughter policy” was introduced for cattle born in a herd in the same year as those confirmed as having BSE. Those cattle who had left the herd were traced, and slaughter of these also occurred.

At the time of the Secretary of State’s statement, the disease of BSE in cattle was already rapidly declining, all clinically suspected and infected animals were slaughtered and disposed of, and measures had been introduced to prevent access of consumers to the potentially infected parts of cattle that may have been incubating the disease but not expressing signs. Thus, although the new measures were considered necessary to improve the confidence of the general public in beef, they were probably of limited benefit in decreasing the risk of spreading infection to cattle or humans, considering the other procedures that were already in place. A relatively similar opinion was held by the Public Health and Animal Health sections of European Union Scientific Committee, which stated that new action was required following the Secretary of State’s announcement. The Spongiform Encephalopathy Advisory Committee, a government committee established to advise on the transmissible encephalopathies, had only suggested, on receiving the news of the new variant CJD, that all meat from OTMS cattle should be deboned. This was probably the only procedure necessary that might have resulted in increased security for consumers.

Problems Arising from New Measures

Most welfare problems with the legislation changes arose from the implementation of the OTMS. Under normal circumstances, older cows, at the end of their working life in dairy or suckler herds, were culled and sold off the farm (usually at markets) to be slaughtered and used in manufactured meat and beef products. This practice stopped immediately following the March 1996 announcement which banned the sale of OTMS cattle meat to the public. Because of the need to dispose of these carcasses after death, other than by way of human consumption, there was initially a cessation, and then, a marked reduction, in the number of culled animals that could be removed from the farm. The OTMS disposal did not get underway until mid-May. Thus, to begin with, there was a backlog of 2 months’ culls, and more and more culled cows were held on farms, waiting for their turn to be disposed of within the system. Although slaughterhouses were licensed to kill these animals,
rendering and disposal facilities were unable to cope, and only a certain quota of cattle could be slaughtered weekly.

Consequences of New Measures

The new measures obviously enforced an increase in the number of adult cattle within the herds and led, to some extent, to overcrowding on some farms. It also meant that there were more cattle to be fed and tended, which competed with the other working cows for forage and labor. Forage was a problem on some farms as it was the end of the winter period, and the feedstocks were becoming low. This situation was not helped by the fact that levels of hay and grass silage, following only limited growth during the summer of the previous year, were lower than in most years. Thus, yields were also low. The previous summer had been hot and had resulted in many farmers having to feed conserved stocks during the hot weather to maintain milk production and reduce loss of weight. Thus, there was inevitably some competition between the various groups of cattle on the farm as to the type, if not the amount, of feed provided. However, the fact that animals destined for OTMS were paid for on a weight basis encouraged farmers to maintain them in good condition—provided there was sufficient feed available.

**Housing problems.** Another problem was where to house the animals, because, as on most farms, the culled cows were out of the normal production cycle and needed to be placed in a group on their own. This allowed the culled cows to have sufficient nutrition to maintain body condition without being in competition with the production cows who would inevitably be requiring more feed or, if in their dry periods, at least needing special diets. Many farms did not have spare accommodation, and existing facilities were placed under pressure at a time when cattle were feeling the effects of the end of a long housing period. This time of year usually tends to see an increase in lameness and mastitis, as well as digestive and metabolic problems. A monthly survey of U.K. veterinary surgeons, begun in May 1995, had shown the number of veterinary visits had reached a new monthly peak in mid-March 1996. In the following month, however, veterinary farm visits showed an immediate reduction. Although this could have been attributed to the cyclical nature of the seasons and farming and practice problems declining with turnout to grass in the spring, the impact of the BSE problem was the more likely cause.

**Impact on farmers.** Confidence of farmers was also severely reduced, and there was extreme despondency among many cattle clients because of the uncertainties and the possibility that other suggested measures may have led to the necessity slaughtering part of their herd. This was reflected in an immediate reduction in orders for preventive medicines. For instance, *Dictyocaulus viviparus*
vaccine (for calves going to grass) was stopped on some farms, and the levels of parasitic bronchitis infection in young and older animals were noticeably higher in the autumns of 1996 and 1997. Several factors may have accounted for the rise, but the reduced use of vaccine was probably one of them.

**Impact of climatic factors.** Unfortunately, the temperatures from January to March 1996 had been below average in all areas; and rainfall in April, which is the usual month for cattle turnout in the United Kingdom, was high in almost all regions. This led to poor grass growth, delayed turnout, and the necessity for supplementary forage feeding for cattle on pasture. As can be imagined, this obviously increased the problems experienced by the farmers, many of whom, by that time, had larger numbers of culled cows to tend. Inevitably, many of these animals received the poorest feed, and some showed a reduction in condition. In the period from mid-April to mid-May, those cows still in production were showing a large number of variable problems, probably reflecting the aftereffects of the long winter, lack of forage, and the relatively cold spring. On some farms, this was exacerbated by the needs of the cull animals.

**Casualty animals.** One major problem that was not initially addressed satisfactorily in many areas after the March announcement was the problem of casualty cows. These animals were suitable for human consumption and, because of injury, disease, or physical abnormality, required rapid removal from the farm, although immediate slaughter was not required on humane grounds. Types of problems that may have fallen into the casualty slaughter category included lameness and mastitis. Abattoirs, knackers, and renderers were already overloaded by dealing with the OTMS scheme. Thus, casualty animals who had more than one pair of permanent incisor teeth or who were OTMS tended to be placed on the waiting list for slaughter, which, rather than receiving priority, could take several months. Once the problem became clear, action was taken in May to rectify it by having special Casualty Certificates, issued by the Ministry of Agriculture, Fisheries, and Food. Pressure was placed on abattoirs to accept these casualty animals.

Other problems arose in which abattoirs were killing both OTMS and beef cattle younger than 30 months of age. In such circumstances, the casualty animal could go to slaughter only on an OTMS day. Slaughter and bleeding on the farm was an option and the carcass, accompanied by a veterinary certificate, could then be moved to any OTMS-designated abattoir. Initially, problems still arose because the slaughtered animal had to enter the abattoir within 12 hr and, again, could be accepted only on OTMS days. However, it was at least possible to take the dead animal to any abattoir that would accept it, regardless of the distance that had to be traveled. The troubles were later relieved as abattoirs became dedicated to dealing only with animals under the OTMS. The number of cattle
then removed from farms under casualty slaughter certificates rose well above normal levels, perhaps suggesting that the system was used to remove some cattle from farms who were not true casualty animals.

ON THE RISE AND ON THE FALL

May of 1996 was the third coldest May on record in this century in the United Kingdom and added to the poor grass growth. However, although feed became or remained short, numbers of cows on farms often continued to rise. From mid-April to mid-May there was a marked increase in all forms of lameness, and some was in the OTMS animals. In most cases, these were treated as promptly as those in the productive herd, although a very few farmers were slightly tardy or used it as a method for the cows' more rapid removal from the farm by means of a Casualty Certificate. Reports continued on the reduction of use in vaccines (especially for leptospirosis, parasitic bronchitis, and calf respiratory disease), again because of a lack of confidence by livestock farmers in the future of cattle production. The pressures on grazing from the backlog of cattle waiting to be slaughtered under the OTMS and the poor grass growth were acknowledged by the government by allowing grazing of culled cows on land designated as set aside (agricultural land taken out of production and receiving a subsidy).

LIMITED PREVENTIVE MEASURES

Veterinary involvement with dairy herds reduced still further in June, but this could have been in line with seasonal trends. From mid-June on, however, veterinary visits were lower than in any other period recorded previously or since in the veterinary surgeon survey. In addition, farmers became more tardy in paying their invoices. The difficulty of predicting when groups of OTMS cows would go for slaughter made the introduction of preventive measures in these animals difficult. Thus, most people did not use dry-cow therapy in the culled cows. Dry-cow intramammary tubes are used to prevent or control mastitis in the nonlactating cow. Because the dry period of a cow usually lasts about 1 to 2 months, dry-cow therapy is also designed to last this length of time. The waiting period for OTMS cows was, at that time, well in excess of 2 months, and so the activity of any dry-cow therapy used would have ceased. Summer mastitis is a common problem in Britain and is believed to be caused by several pathogens but, particularly, *Actinomyces pyogenes* and *Peptococcus indolicus*. Activity of a fly, *Hydrotoea irritans*, is considered to be involved in spread of the problem and usually occurs from July to September or later. Conditions in 1996 were favorable for fly activity, and problems began in July and continued throughout the summer when it became apparent that propor-
tionally more cases were occurring in the cull cows than the others still being used for production in the herd.

OTMS BACKLOG REDUCTION

By September 1996, many cows had calved for autumn and winter milk production, thereby continuing the farming cycle. Veterinary visits, although there was continuing despondency among farmers, began to increase. Problems still arose from the sale of culled cows, and there were still large numbers accumulating on some farms. Part of the problem appears to have been that the various procedures to allow removal of animals from the farm no longer allowed farmers to send such cows to the market. Things subsequently improved, and the backlogs of OTMS cows reduced. By November, the backlogs had ceased in Scotland and, by early 1997, in England and Wales.

SLAUGHTER AND COMPENSATION

Calves were being slaughtered from dairy herds with compensation under the calf-processing aid scheme. This slaughter removed from the cattle population a large number of animals who would otherwise have been difficult to sell. Usually, about 350,000 calves had been exported each year to continental countries including France, Holland, and Belgium for veal production. This legal trade was disliked by many members of the public as some of the animals could continue their growth in "veal crates." The ban by the European Union of calf exports because of BSE overcame this welfare issue. The ability to slaughter calves with compensation in the United Kingdom meant that, even if they could have been sent to Europe, there was a realistic financial option to their going to market and then being transported to veal-rearing units on the continent. The slaughter of these young calves was not appreciated by some welfare groups. They did not appear to understand that the calves could not all be raised economically for beef in the United Kingdom and, inevitably, would have been slaughtered or reared in low-input systems. Unfortunately, under European legislation calves could be exported to Britain. Some continental farmers, taking advantage of the slaughter premium, exported their calves. This practice could not be stopped. The level of this movement, however, was low because, generally, the profit margins to the importer were much less than those realized when British calves went over to Europe for veal production.

Up to March 1996, most beef in the United Kingdom came from surplus calves and cull cows from the beef herd. Much less meat was derived from the true beef calves or cows of the suckler herd. Initially, then, the calves from the suckler herds, who were true beef calves, were not included in the legislation. Many of these animals were sold successfully during the traditional autumn and winter sales.
However, some of the poorer animals did not find a ready market as the beef finishers were worried about their ability to sell them once the animals were ready for slaughter. Farmers with such animals were advised when possible to keep them as they could, then improve their condition, and receive a subsidy once the calves were 10 months old. The producer could then decide whether to fatten them up or sell them as stores (animals requiring further fattening) in the spring of 1997, when beef finishers would be looking for animals to graze the grass that would then be growing.

CONCLUSION

The impact of the Secretary of Health’s March 20, 1966, announcement probably cannot be realized by those outside the British cattle industry. The farmers saw a threat to their life’s work and the possibility of their own financial destruction. The next few days saw procedures being introduced that were to act as a damage limitation exercise. Inevitably, the decisions made could not always account for, or predict, their complete consequences. The slaughtering of large numbers of animals and their removal from the food chain produced major bottlenecks in the disposal and rendering of carcasses. This meant that a quota type of system had to be used and inevitably meant that cattle remained on farms longer than would have normally occurred. Despite the problems that arose and the difficulties presented in terms of the weather and grass growth patterns, the new procedures were implemented with only limited difficulties. Where problems arose because of the legislation, itself, every effort was made to produce effective and satisfactory solutions.

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