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"Mad Cow": Is the Media Milking an Overblown Threat?

by Iain Murray

The recent confirmation of a new case of Bovine Spongiform Encephalopathy (BSE)—popularly known as "Mad Cow" disease—in Canada has led for calls to close the border once more to Canadian beef imports. Beef import restrictions are often justified by the assertion that BSE-infected cattle pose an unacceptable risk to human health, because of the alleged link between BSE and the fatal, incurable human brain disease variant Creutzfeldt-Jakob Disease (vCJD). However, a fair review of the evidence from Britain and France indicates that the threat to human health from BSE in the United States is minimal.

The Current Theory Linking BSE and vCJD. The scientific theory linking BSE and vCJD, as outlined by Dr Paul Brown of the Centers for Disease Control and Prevention, can be summarized as follows[1]:

- The infectious agent that causes scrapie—a degenerative nervous system disease similar to BSE—in sheep crossed the species barrier in the United Kingdom to bovines to cause bovine spongiform encephalopathy.
- Changes in the butchering of livestock carcasses allowed infectivity to survive and contaminate meat and bone meal in livestock feed, amplifying infection to epidemic proportions.
- Export of contaminated meat and bone meal and live cattle incubating the disease caused the spread of BSE to other countries.
- BSE caused vCJD, most probably through adulteration of cooked meat products with mechanically recovered meat (meat scraped off animal carcasses) contaminated by compressed spinal cord and paraspinal ganglia (collections of nerve cell bodies and their fibers laying alongside the spine).

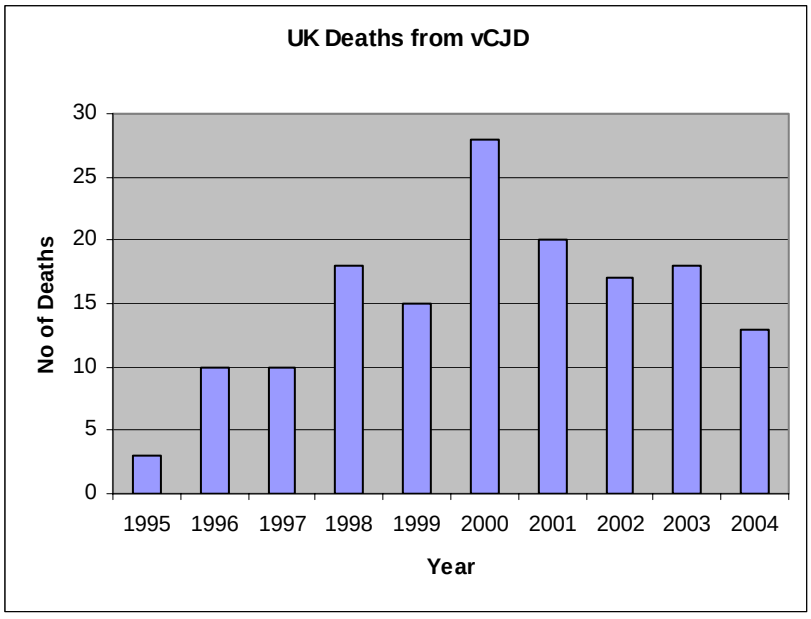
This last point is important. As Dr. Brown says, "Other possible sources of contamination from the nervous system (for example, blood vessel blockage in the brain induced by cranial stunning at slaughter or cross-contamination of slaughterhouse tools) pale to insignificance compared with the contaminating potential inherent" in the practice of mechanically recovered meat.

As a result of the various bans on animal feedstuff that curtailed the BSE epidemic in the UK, the medical judgment is that BSE is "trailing down to extinction in the United Kingdom and still remains a comparatively trivial problem in continental Europe."[2] If it is trivial in Europe (see discussion of France below), it is barely discernable in North America.

There are some significant questions[3] that remain unanswered related to the causal link between BSE and vCJD, but those questions are irrelevant to the discussion that follows, which should demonstrate that vCJD is not the apocalyptic threat it has been presented as, even in the United Kingdom.

The UK Experience: Better than Feared. The United Kingdom remains the only country to have experienced anything like a sustained outbreak of vCJD, yet the cases have been few. According to the latest data from the UK's National CJD Surveillance Unit based at the Western General Hospital in Edinburgh, Scotland[4], there have been 147 deaths from the disease since 1995 and five more cases where the victim is still alive. In one case, new treatment appears to have halted progress of the disease.[5]

The figures also show a tailing off in recent years:



Previous predictions of a massive number of deaths (over 100,000 predicted at one stage) depended on assumptions of long incubation periods. As the length of time has increased

from the height of the BSE epidemic, those predictions have decreased. At the time Dr. Brown wrote his summary, there was a best estimate of 600 more deaths.[6]

This estimate has since been revised downwards to 40 more deaths.[7] If this is the case, the massive BSE epidemic in the UK, which possibly infected millions of cattle, will be responsible for slightly under 200 deaths over the lifetime of the vCJD outbreak. This suggests a risk smaller than the average American's risk of being killed by lightning.[8]

The French Experience: Epidemic with Little Adverse Effect. A recent study published in the journal *Veterinary Research*[9] found that France suffered a BSE epidemic in the 1980s that went undetected, with perhaps 300,000 cattle infected between 1980 and 1997. Of these, 48,000 entered the food chain. The researchers conclude that, "Exposure of the French population to the BSE agent via French bovine products was not negligible compared to exposure of the French population via the imports of British bovine products." There have been only two confirmed deaths from vCJD in France.

Potential for Spread of BSE in the U.S. is Minimal. The Harvard Center for Risk Analysis performed an assessment of "the consequences of a hypothetical introduction of BSE into the U.S. from Canada in terms of its spread in the U.S. cattle population and potential human exposure to BSE infectivity in food."[10] The results indicate that, even for the worst case where BSE was assumed to have been introduced to the U.S. as early as 1990, the highest number of infected U.S. cattle would be around 100, with a median prediction of only 24 cases. As the Harvard researchers point out, the more effective the imposition of a feedstuff ban by the Food and Drug Administration and other risk management measures are assumed to have been, the lower the potential spread of BSE.

Conclusions. Given the small number of infected cattle being detected in the United States and Canada, it should be clear from the evidence outlined above that BSE does not pose an appreciable risk to human health in either country. The BSE agent is not present in anywhere near the numbers that led to either the small, though tragic, outbreak of vCJD in the UK or even to the very low number of deaths in France. The unique circumstances that applied to the European outbreaks, relating to the way in which BSE spread among cattle as a result of contaminated animal feed, no longer apply as the feeding practice concerned has been banned by the FDA (and was never common as a result of the alternative, soybean meal, being cheaper and widely available). It is therefore highly unlikely that the levels of BSE prevalence in cattle that caused the UK vCJD outbreak will ever be present in the U.S.

Any risk analysis that suggests that current or even (realistic) potential levels of BSE contamination in the United States or Canada present an appreciable or significant risk to human health must be regarded as flawed.

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Notes:

[1] P. Brown, "Bovine spongiform encephalopathy and variant Creutzfeldt-Jakob disease," *British Medical Journal* 322, April 7, 2001, p.841-844.
[2] Ibid
[3] G. Venters, "New variant Creutzfeldt-Jakob disease: the epidemic that never was," *British Medical Journal* 323, October 13, 2001, p.858-861.
[4] http://www.cjd.ed.ac.uk/figures.htm
[5] http://www.abc.net.au/news/newsitems/200412/s1264556.htm
[6] Op cit
[7] A.C. Ghani, et al., "Updated projections of future vCJD deaths in the UK," BMC Infectious Diseases 2003, 3:4, available from http://www.biomedcentral.com/1471-2334/3/4
[8] Assuming about 100 deaths per year in the US, as estimated by the National Oceanic and Atmospheric Administration.
[9] V. Supervie, and D. Costagliola, "The Unrecognized French BSE Epidemic," Vet. Res. 35, p.349-362, 2004.
[10] J.T. Cohen and G.M. Gray, "Evaluation of the Potential Spread of BSE in Cattle and Possible Human Exposure Following Introduction of Infectivity into the United States from Canada," dated 09/05/03. Available at http://www.hcra.harvard.edu/canadian_reanalysis.html