

BSE in sheep: scientific facts and uncertainties

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The epidemic of BSE in cattle in the UK was caused by recycling the waste parts of ruminants (sheep and cattle) back to cattle, after the waste parts had been rendered and processed into a concentrate high protein feed, meat and bone meal (MBM). In experimental studies, the susceptibility of some kinds of sheep to infection with the BSE agent orally is similar to that of cattle. In the 1980's MBM was used in cattle and sheep rations, though considerably smaller quantities were fed to sheep. There is thus the possibility that some sheep were infected with the BSE agent through feed. Clinically, BSE in sheep is likely to present as indistinguishable from the sheep disease "scrapie", which has been in the sheep population for centuries and appears not to harm humans. There appears not to have been a large epidemic of a scrapie-like illness in sheep at the same time as the BSE epidemic in cattle, but surveillance for scrapie is known to be poor and it is possible that some cases of scrapie were due to the BSE agent. Because the feed route of transmission should have been closed by the controls placed on ruminant feed from 1988 onwards, it is unlikely that any cases of BSE in the sheep flock now would be attributable to feed transmission, as generally sheep live shorter lives than cattle. However, scrapie is transmitted from sheep to sheep, by a mechanism not yet fully known. If BSE had been introduced into the sheep flock, it is possible it could have been maintained there by sheep-to-sheep transmission (whereas cattle-to-cattle transmission has not been documented to occur, and if it occurs at all, this must be at a very low level). Thus there is a theoretical possibility that some current cases of scrapie are attributable to BSE. Distinguishing BSE from scrapie in laboratory testing is not straightforward, but studies to date have not found evidence of BSE. However, the possibility cannot be excluded currently that a small proportion of scrapie cases, of the order of up to 1%, might be attributable to BSE. If sheep were infected with the BSE agent, protecting humans from infection by the exclusion of certain tissues from the diet would be more difficult than is the case with respect to cattle, in which fewer tissues show evidence of infectivity. Some precautionary measures have been taken to protect humans against the theoretical possibility of BSE in sheep but it is difficult to judge where to draw the precautionary line in a situation in which direct evidence of a human health risk is lacking.