An update on BSE

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Good nutrition and food safety communication involves science-based information that is presented in context in a non-alarmist manner. One area where this has not always been the case is Bovine Spongiform Encephalopathy or BSE. This article looks at the facts about BSE and identifies areas where scientists still don't have the answers.

What is BSE?

Bovine Spongiform Encephalopathy (BSE), commonly known as "mad cow disease", is a fatal brain disease that affects cattle. BSE is one type of a group of prion diseases referred to as Transmissible Spongiform Encephalopathies (TSEs). TSEs are fatal diseases that cause spongy degeneration of the brain and severe neurological symptoms.

The origin of BSE is not yet known. According to one theory, the agent consists of "transmissible misshapen ("rogue") prions" that are capable of interacting with normal prions (proteins naturally found, mostly in the brain but also in other tissues, of humans and animals) to induce their transformation to "transmissible prions". Other factors are thought to be involved in the development of BSE and research in this area is continuing.

Route of transmission not proven

The route of transmission of BSE is still not proven. It is thought so far that cattle may have become infected with BSE when being fed meat and bone meal or rendered products made from BSE-infected carcasses. Other possible routes and causes of transmission have still not been ruled out.

The incidence of BSE has shown a significant decline every year in the UK since the peak of the disease in 1992. In 1999, there were 2300 reported cases. This figure fell to 1443 in 2000 and 755 up to November 2002.

Significantly smaller numbers of BSE cases have been reported in Austria, Belgium, Czech Republic, Denmark , Finland, France, Germany, Greece, Ireland, Italy, Japan, Liechtenstein, Luxembourg, the Netherlands, Portugal, Slovakia. Slovenia, Spain and Switzerland (see http://www.oie.int for updated figures).

To date, BSE has only been detected in cattle. There is a theoretical risk of BSE in sheep but to date no sheep has been demonstrated to have contracted BSE, except experimentally in very extreme conditions in laboratories.

Can BSE affect humans?

Although no direct cause and effect relationship has been proven scientifically, it is thought, based on some neurological and cytological (tissue) findings, that BSE in cattle and variant Creutzfeldt-Jakobs Disease (v-CJD) in humans might be linked. The first case of v-CJD was reported in March 1996 in the UK. v-CJD, like BSE, causes sponge-like changes and hence degeneration of the brain. The disease is not treatable and fatal. As of October 4, 2002, there have been 128 cases of v-CJD in the UK (94 confirmed and 35 suspected). There have been 5 confirmed cases of VCJD in France and one in Ireland and in Italy. There are two further suspected cases in France.

BSE agent not found in beef or cows milk "Specified risk material" (SRM), refers to the parts of cattle that are most likely to be infected with the BSE agent and include the central nervous system including the brain, the eye and part of the large intestine. SRMs have now been removed from both the food and the feed chain. The BSE agent has not been detected in muscle meat or milk and WHO and EU experts have confirmed that cows milk and beef meat are safe.

Although it is not possible to accurately predict the future incidence of v-CJD in humans because of the long incubation period before symptoms become apparent, the risk of contracting v-CJD is now considered to be very low. Strict regulations to govern animal feeding, testing, slaughter, the age of cattle slaughtered for human consumption and removal of any organs at-risk of BSE-infection (SRMs), have reduced the risk. Questions remain however regarding the origin of BSE and the mode of transmission thereby making this subject an area of intense research for some time to come.

For further information on BSE try www.bsereview.org.uk

References

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