

Risk management of transmissible spongiform encephalopathies in Asia

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Summary

A questionnaire-based survey was distributed to the Office International des Epizooties (OIE: World organisation for animal health) Member Countries in Asia to assess the use of risk management for transmissible spongiform encephalopathies. The author presents a summary of 16 responses received in July 2002.

The survey revealed that import risk analysis on bovine spongiform encephalopathy (BSE) is not routinely carried out in ten countries, indicating an urgent need for further training courses. Although the number of ruminants imported from Europe is relatively small, significant quantities of feedstuffs of ruminant origin have been imported into Asia, which may mean that the BSE agent could have reached domestic cattle in most countries. The external challenge has been considerably reduced in recent years as most countries in Asia banned the importation of feedstuffs from countries with BSE, but a few weak spots which enable imports of risk materials still persist.

Recycling of BSE through rendering plants is unlikely but cannot be totally excluded in some countries such as the People's Republic of China, India, Japan, Pakistan and Taipei China. Therefore, much more stringent management at slaughterhouses and rendering plants, as well as extensive surveillance programmes, are required in those countries.

Bovine spongiform encephalopathy is not notifiable in six countries, indicating a total absence of risk management of BSE in those countries. Immediate actions by these governments to declare BSE a notifiable disease are considered necessary.

Numbers of specimens tested for BSE are still very small in most countries in Asia, indicating a pressing need to upgrade surveillance programmes by introducing modern (economically affordable) diagnostic methods and by conducting practical training courses on epidemiological surveillance systems.

With the exception of Japan, very little work has been performed on scrapie in Asia although the disease has been routinely monitored in the People's Republic of China, India, Myanmar, Pakistan and Taipei China.

Keywords

Asia – Bovine spongiform encephalopathy – Import risk analysis – Meat-and-bone meal – Risk management – Scrapie – Transmissible spongiform encephalopathy.

Introduction

In Asia, bovine spongiform encephalopathy (BSE) was generally considered as a new disease of cattle confined to the United Kingdom (UK) and a few other countries in Europe until presence of the disease was confirmed in Japan in September 2001. Furthermore, countries in Asia also generally believed that feedstuffs derived from ruminants in countries that had not reported BSE to the Office International des

Epizooties (OIE: World organisation for animal health) were safe for animal use.

However, the recent warning from international organisations such as the OIE, the Food and Agriculture Organization (FAO), the World Health Organization (WHO) and the European Union (EU), calling for more serious reflection on BSE drew the attention of several governments in Asia who are now considering more stringent measures to prevent the entry of

BSE into their countries or territories. The survey questionnaires were sent in April 2002 to all OIE Member Countries and territories in Asia. Answers were received from Bangladesh, Bhutan, Cambodia, Hong Kong, India, Japan, Malaysia, Myanmar, Nepal, Pakistan, the Philippines, Singapore, Sri Lanka, Taipei China, Thailand and Vietnam. The report of the People's Republic of China entitled 'Risk Analysis and Assessment of BSE in China' (1) published in 2000 was also taken into consideration. Later, the Republic of Korea submitted a summary report which is included in the Chapter 'Risk management activities in the Republic of Korea' below.

The author summarises the risk management measures taken by countries in Asia. The Chapter on 'Trade-related measures (external challenge)' of the report concerns international trade of risk commodities, the Chapter 'Preventive or control measures taken by individual governments' relates to the preventive measures implemented and the Chapter on 'Surveillance programmes', to the surveillance programmes in the Member Countries.

Trade-related measures (external challenge)

Import risk analysis

As shown in Table I, the majority of countries in Asia do not perform import risk analysis (IRA) due either to a lack of specialists or lack of resources. Clearly, much more intensive training and guidance must be provided on a continuous basis in most of the countries in this region to create a reliable team of specialists on risk assessment in each country.

Table I
Import risk analysis

Country/territory	Risk analysis	Remarks
Bangladesh	No	No specialists/insufficient training
Bhutan	No	No specialists/insufficient training
Cambodia	No	No specialists
Hong Kong, China	No	No specialists/insufficient training
India	Yes	All livestock and products imported from all countries
Japan	Yes	All imported products of ruminant origin
Malaysia	No	No response
Myanmar	No	No specialists/insufficient training
Nepal	No	No specialists
Pakistan	Yes	Products imported from France
Philippines	No	Insufficient training
Singapore	No	Insufficient resources
Sri Lanka	No	Complete import ban on risk materials
Taipei China	Yes	Import ban on risk materials from countries with bovine spongiform encephalopathy
Thailand	Yes	Progressive import restriction on risk materials and animals
Vietnam	Yes	No detailed explanation

Importation of animals from countries with bovine spongiform encephalopathy

Only a few countries in Asia imported cattle from countries known to have been infected with BSE (Table II). Bangladesh imported 150 cattle from Spain, but the year of importation was not specified. India imported cattle from Germany between 1986 and 1996, from Spain in 1988, from Denmark in 1990 and 1998, and from Israel in 1996. Japan imported cattle from the UK in 1982 (5 head), in 1987 (9 head) and in 1988 (19 head), and from Germany in 1993 (16 head).

These data are consistent with the fact that no outbreak of BSE has been observed in Asia in ruminants imported from Europe. However, the figures provided by the governments were not always identical to those provided by other sources such as Eurostat.

Table II
Imports of cattle and buffalo

Country/territory	Animals imported	Country of origin
Bangladesh	150 cattle	Spain
Bhutan	None since the 1960s	
Cambodia	None	
Hong Kong, China	None	
India	Cattle (numbers not specified)	Denmark (1990, 1998) Germany (1986, 1987, 1989, 1993, 1995, 1996) Israel (1996) Spain (1988)
Japan	Cattle	Germany (16 in 1993) United Kingdom (5 in 1982, 9 in 1987, 19 in 1988)
Malaysia	None	
Myanmar	None	
Nepal	None	
Pakistan	None	
Philippines	300 buffalo	Bulgaria (1997-1998)*
Singapore	None	
Sri Lanka	None	
Taipei China	None	
Thailand	None from Europe	
Vietnam	None	

* Bulgaria has not reported the presence of bovine spongiform encephalopathy

Importation of by-products of ruminant origin

By-products of ruminant origin, such as meat-and-bone meal (MBM), bone meal (BM), meat meal (MM), greaves and mixed feedstuff containing any of the above are considered potential sources for the BSE agent. As shown in Table III, some countries imported none of these commodities while others imported large quantities of them from Europe. Bhutan, Cambodia,

Table III
Imports of meat-and-bone meal, bone meal, meat meal, greaves and mixed feedstuffs from Europe

Country/territory	Status of importation
Bangladesh	Quantities imported unknown (no import restrictions)
Bhutan	No imports from Europe (from India only)
Cambodia	No response
Hong Kong, China	No official ban (rely on voluntary bans on exports from the European Union since 1 January 2001)
India	No official records on imports. Imports stopped in 1998
Japan	Imports continued until 2000 from countries with no record of bovine spongiform encephalopathy (BSE) (see Table IV)
Malaysia	Imports from BSE-affected countries stopped (see Tables IV and V)
Myanmar	No imports from Europe
Nepal	No imports from Europe (too costly)
Pakistan	Imports from the United Kingdom, Belgium and Germany
Philippines	Imports from the United Kingdom and other European Union countries, but suspended in 2001
Singapore	Imports from the Netherlands in 1985, but feeding banned in 1997
Sri Lanka	No imports (ruminants not fed with these materials)
Taipei China	Imports suspended as the country experienced outbreaks of BSE
Thailand	Imports from Belgium, Denmark, France, Germany, Italy, the Netherlands, Norway, Spain and the United Kingdom (see Table IV)
Vietnam	Imports from France in 1999

Myanmar and Nepal belong to the first category of countries while Hong Kong, Japan, Malaysia, Pakistan and Thailand belong to the latter group (Table IV). According to Eurostat data (3), however, some countries in Asia such as Sri Lanka, Indonesia, the Philippines and Taipei China also imported considerable amounts of these by-products (10,852, 306,245, 15,592 and 7,850 tonnes, respectively between 1988 and 2000), demonstrating discrepancies between the data provided by exporters and importers.

Furthermore, the data provided by some veterinary administrations were not always comprehensive and some imported commodities such as MBM were most likely trans-shipped from major trans-shipment hubs such as Singapore and Hong Kong to other countries in Asia. This and the other facts mentioned above indicate that the BSE agent may have reached several countries and territories in Asia where feedstuffs of ruminant origin were imported from Europe in large quantities.

Import bans on ruminant by-products

Only four countries, namely Bhutan, Cambodia, Myanmar and Nepal, stated that they had not imported ruminant by-products

of European origin. Import bans have not been imposed by Bangladesh and Hong Kong, which means that MBM and other commodities from BSE-affected countries can still be introduced into Asia via these countries. Other countries in Asia banned the import of these commodities between 1990 and 2001. The commodities and years the bans were implemented are summarised in Table V.

Table IV
Quantities of meat-and-bone meal imported from Europe

Country/territory	Quantities imported
Bangladesh	Quantities unknown (no import restrictions)
Bhutan	Not applicable (imports from India only)
Cambodia	No response
Hong Kong, China	Three tonnes in 1989 from the Netherlands (further details are available on request)
India	None from European countries infected with transmissible spongiform encephalopathy
Japan	– Denmark (211 tonnes in 1999, 25,768 tonnes in 2000) – Germany (47 tonnes in 1992) – Italy (394 tonnes in 1990, 20 tonnes of chicken meal in 1993, 21 tonnes in 1995, 105 tonnes in 1996, 60 tonnes in 1997, 5,222 tonnes in 1998, 19,192 tonnes in 1999 and 28,857 tonnes in 2000) – Russia (38 tonnes in 1993)
Malaysia	– Denmark (1,268 tonnes in 2000) – France (43 tonnes in 1996) and the Netherlands (163 tonnes in 1996); all used for poultry – Italy (948 tonnes in 2000)
Myanmar	None from Europe
Nepal	None from Europe
Pakistan	– Belgium (20 tonnes in 1992) – Germany (5 tonnes in 1997) – United Kingdom (43 tonnes in 1995) } All transit trade for Afghanistan
Philippines	– United Kingdom (in 1995, meat-and-bone meal [MBM], greaves [G], feedstuffs [F]); – Other European countries (in 2000, MBM, G, F) all used for pigs and poultry (see Table VI)
Singapore	The Netherlands (3,773 tonnes in 1985)
Sri Lanka	None imported from Europe (MBM not used for ruminants)
Taipei China	Since 1990, imports of MBM from BSE-affected countries has been prohibited. Quantities of MBM imported from Europe not mentioned
Thailand	– Belgium (600 tonnes in 1988 and 1996) – Denmark (65,133 tonnes from 1994 to 1999) – France (33,847 tonnes from 1989 to 1999) – Germany (3,617 tonnes from 1994 to 1997) – Italy (58,631 tonnes from 1991 to 1997) – The Netherlands (3,122 tonnes from 1990 to 1997) – Norway (14 tonnes in 1992 and 1999) – Spain (200 tonnes in 1996) – United Kingdom (25,666 tonnes from 1990 to 1999)
Vietnam	France (344 tonnes in 1999); used for pigs

Table V
Import bans on meat-and-bone meal, bone meal, meat meal, greaves and mixed feedstuffs from Europe

Country/territory	Suspension of imports
Bangladesh	Not yet suspended
Bhutan	No imports from Europe
Cambodia	No imports from Europe
Hong Kong, China	Not suspended (rely on voluntary bans by exporters); also request farmers not to use meals from countries with bovine spongiform encephalopathy (BSE)
India	In 1998, suspended all imports from transmissible spongiform encephalopathy (TSE)-infected countries (no imports from European countries with BSE)
Japan	Suspended imports from countries with BSE (further details are available on request)
Malaysia	Meat-and-bone meal (MBM): 1996 from the United Kingdom, France and the Netherlands, 2001 from Italy and Denmark
Myanmar	No imports from Europe
Nepal	Never imported from Europe
Pakistan	In 2001, from the United Kingdom, Ireland, Belgium, Canada, Denmark, France, Argentina, Falkland, Germany, Italy, Luxembourg, the Netherlands and Spain
Philippines	MBM, greaves (G), feedstuff (F): 1995 from the United Kingdom, 2000 from other EU countries; MBM: 2001 from all other countries
Singapore	No imports other than MBM from the Netherlands in 1985
Sri Lanka	In 1997, imports of MBM, bone meal (BM), meat meal (MM), G, F from Europe suspended
Taipei China	In 1990, from the United Kingdom (sheep/goat MBM, BM, MM and F); since then the list of countries and suspended items increased year by year to include all the countries with BSE
Thailand	– In 1990, from the United Kingdom (all bovine, ovine, caprine products) – In 1993, from other countries having reported BSE – In 1996, from the United Kingdom and other BSE-affected countries (MBM, BM, MM, blood meal of cattle origin) – In 2001, total import bans from countries with BSE (MBM, BM, MM, blood meal, G, F and tallow)
Vietnam	In 1999, suspended imports (MBM, BM, MM, F, G) from all countries with BSE

Preventive or control measures taken by individual governments

Preventive or control measures for internal challenge enforced by countries in Asia are at different stages of development, some being at a very high level while others are at an elementary level. This survey assessed the status of the measures implemented by OIE Member Governments, as follows:

- public awareness programmes and contingency plans for BSE
- ban on feeding animals with ruminant by-products

- rendering of raw materials or carcasses of ruminants
- bovine spongiform encephalopathy surveillance programmes
- diagnostic services, including the results of tests for BSE and transmissible spongiform encephalopathies (TSEs).

Public awareness programmes and contingency plans

Public education programmes on BSE are operational in the majority of the countries in Asia, but five countries have not implemented any programmes of the sort (Table VI). The public awareness programmes include training courses, mass-communication media, publications, internet systems and meetings, but more intensive and well organised awareness campaigns seem to be required in all the countries.

Table VI
Bovine spongiform encephalopathy awareness programmes and contingency planning

Country/territory	Ongoing programme	Contingency plan
Bangladesh	None	No (unavailable)
Bhutan	None	No
Cambodia	None	Yes (available)
Hong Kong, China	None	Yes
India	Mass media, publications, meetings	Yes
Japan	Training courses, mass media, publications	Yes
Malaysia	Meetings, distribution of protocols	Yes
Myanmar	None	Yes
Nepal	Mass media	No
Pakistan	Training courses, mass media, workshops	Yes
Philippines	Training courses, mass media	No
Singapore	Training courses	Yes
Sri Lanka	Training courses, publications	No
Taipei China	Training courses, publications (Internet)	Yes
Thailand	Training courses, publications (Internet)	Yes
Vietnam	Training courses, mass media, publications	Yes

A contingency plan is available in each of twelve countries, including the Republic of Korea (see Chapter 'Risk management activities in the Republic of Korea'). However, provision of a plan does not always mean that the country is ready to manage BSE. It is considered essential to test the plans through simulation exercises or training courses at regular intervals (Table VI), and to review the plans annually.

Ban on feeding ruminants with feedstuffs derived from ruminants

Official bans were imposed in India (1999), Japan (2001), Singapore (1997), Taipei China (1997), Thailand (1998) and Vietnam (1998) (Table VII).

Table VII
Bans on the use of meat-and-bone meal, bone meal, meat meal, greaves and mixed feedstuffs derived from ruminants

Country/territory	Status of ban
Bangladesh	No ban
Bhutan	No ban
Cambodia	No ban
Hong Kong, China	Not prohibited (farmers are requested not to use materials imported from countries with bovine spongiform encephalopathy)
India	Feeding of meat-and-bone meal (MBM) is not practised due to socio-religious reasons (however, a ruminant protein feed ban was imposed in 1999)
Japan	In 1996, official instructions prohibited the use of feeds derived from ruminants In 2001, a legal ban was imposed on feeds containing proteins from mammals for feeding ruminants, pigs and poultry
Malaysia	Ruminants are fed with palm kernel cake as a supplement. Feeds containing MBM are used for poultry only
Myanmar	No response
Nepal	Feed ingredients are imported from India only for poultry feed production (amount unknown)
Pakistan	No response
Philippines	In 2000, the use of MBM, greaves (G) and feedstuff (F) for pigs, poultry, fish and pets was prohibited (feeding of ruminants with MBM, G, F not practised)
Singapore	In 1997, the use of MBM, bone meal (BM), meat meal (MM), G and F for ruminants was prohibited In 2001, pet food containing mammalian proteins from BSE-affected countries was prohibited
Sri Lanka	No specific mention (pet food prohibited since 1997)
Taipei China	Since 1997, the use of ruminant-derived MBM is banned Since 2001, the use of animal proteins (MM, BM, poultry meal, blood meal except fish meal) in ruminant feeds is banned
Thailand	Since 1998, feeding ruminants with MBM and MM is prohibited
Vietnam	Since 1998, the use of MBM, MM, greaves and blood meal for ruminants is prohibited

In Hong Kong, farmers have been requested not to feed ruminants with products from countries with BSE. The answer to the questionnaire stated that all MBM imported into Hong Kong is used for pigs and poultry. In Malaysia, feeds containing MBM are used for poultry only and ruminants are fed with palm kernel cake as a supplement.

In the Philippines, ruminants including buffalo, are not fed with imported MBM, greaves and mixed feedstuff, and feeds containing these materials were prohibited in 2000 for pigs, poultry, fish and pets.

In Taipei China, the use of MBM in ruminant feeds was prohibited in 1997 and use of all animal proteins except fish meal was banned in 2001.

In Thailand, official bans on feeding ruminants with MBM and MM were enforced in 1998. Vietnam also banned the use of MBM, MM, greaves and blood meal for ruminants.

Rendering of ruminant by-products

There are no rendering plants for ruminants in Bangladesh, Bhutan, Cambodia, Malaysia, Nepal, the Philippines, Singapore, Thailand and Vietnam as shown in Table VIII. However, in some countries, rendering plants refer to plants rendering meat waste only, and not to plants rendering bones.

In Hong Kong, materials derived from pigs are rendered and the other wastes are sent to landfills. In India, animals are rendered mainly for fertiliser, the ceramic industry and gelatine production. There are 21 rendering plants in Japan and approximately 320,000 tonnes of cattle, 704,000 tonnes of pigs and 576,000 tonnes of poultry are rendered annually. Only 5.4% to 13.4% of these materials are steam-heated at 133°C for 20 minutes at a pressure of 3 bar.

In Pakistan, about 8,000 tonnes of ruminants are rendered, but dead animals are incinerated or buried. In Sri Lanka, only poultry materials are rendered. Taipei China possesses five rendering plants and cattle, pigs and poultry are rendered with heat treatment at 133°C for 20 minutes at a pressure of 3 bar. In Thailand, there are no plants for the production of MBM and MM; only feather meal and steamed BM for fertiliser are produced with heat treatment.

Surveillance programmes

Notification of suspected cases of bovine spongiform encephalopathy and scrapie

Bovine spongiform encephalopathy is not notifiable in Bangladesh, Bhutan, Cambodia, Hong Kong, Myanmar and Nepal (Table IX) indicating that BSE could be reported as a variety of different diseases in these countries. None of these

Table VIII
Rendering of raw materials or carcasses of ruminants

Country/territory	Status
Bangladesh	No rendering
Bhutan	No rendering (usually incinerated or buried)
Cambodia	No rendering
Hong Kong, China	34,300 tonnes of pig materials only (process includes heating at 133°C for 20 minutes at a pressure of 3 bar). The rest is sent to landfills
India	Animals are not rendered for feed production but for fertiliser, the ceramic industry, gelatine, etc.
Japan	121 plants: 320,000 tonnes of cattle, 704,000 tonnes of pigs and 576,000 tonnes of poultry rendered (5.4%~13.4% heat-treated). Dead animals are examined for bovine spongiform encephalopathy and incinerated
Malaysia	No rendering
Myanmar	Yes, rendered but no details provided
Nepal	No rendering (skin and bones are collected in some areas, but dead carcasses are disposed on the riverside or in open fields)
Pakistan	4,380 tonnes of cattle, 1,340 tonnes of buffalo, 2,250 tonnes of sheep/goats. Dead animals are incinerated or buried
Philippines	No rendering
Singapore	No rendering industry exists. Dead cows are buried or incinerated
Sri Lanka	Two rendering plants for poultry materials. Dead animals are buried or incinerated
Taipei China	Five rendering plants: 49,246 tonnes of cattle, 0.65 tonnes of sheep/goats, 35,501.938 tonnes of pigs and 2,403.48 tonnes of poultry (all heat-treated)
Thailand	No rendering plant for meat-and-bone meal and meat meal. Feather meal and steamed bone meal for fertiliser are produced and the latter is heat-treated
Vietnam	No rendering

Table IX
Bovine spongiform encephalopathy surveillance programmes

Country/territory	Status of notification, training programmes, compensation
Bangladesh	Bovine spongiform encephalopathy (BSE) is not notifiable (no national training courses held)
Bhutan	BSE is not notifiable (will start awareness training using a video)
Cambodia	BSE is not notifiable (no training courses/no compensation scheme)
Hong Kong, China	BSE is not notifiable (in the process of making the disease notifiable). Attended Food and Agriculture Organization/Office International des Epizooties workshop on BSE diagnosis. No compensation scheme for BSE cases
India	BSE is notifiable (training courses since 2000/no compensation scheme)
Japan	BSE is notifiable since 1996. Training courses since 1996. Compensation for BSE-suspected bovines since 1996
Malaysia	BSE is notifiable (training courses since 2000/no compensation scheme)
Myanmar	BSE is not notifiable (no national training programmes/no compensation scheme)
Nepal	BSE is not notifiable (no national training/no compensation scheme)
Pakistan	BSE is notifiable since 1996. Training is provided, but no compensation scheme for BSE
Philippines	BSE is notifiable since 1992. Training given in 2000. No compensation scheme for BSE
Singapore	BSE is notifiable since 1994. Training courses organised since 1994, but no compensation scheme for BSE. Active surveillance started from February 2001
Sri Lanka	BSE is notifiable since 1996. No compensation scheme for BSE
Taipei China	BSE is notifiable since 1990. Training commenced in 1990. Compensation scheme for BSE commenced in 1990, but no BSE cases have been detected
Thailand	BSE is notifiable since 1990. Training courses commenced in 1990. Compensation for BSE suspected cases available
Vietnam	BSE is notifiable since 1998. Training courses commenced in 1998. No compensation for BSE suspected cases paid

countries therefore possess compensation schemes for BSE or BSE-suspected cases.

Bovine spongiform encephalopathy is notifiable in other countries in Asia and these have implemented routine surveillance programmes. However, only a few countries such as Japan, Taipei China and Thailand have compensation schemes for suspected cases of BSE.

Scrapie is routinely monitored in the People's Republic of China (1), India, Japan, Myanmar, Pakistan and Taipei China, although practically no surveillance for the disease is conducted in other countries of the region.

Diagnostic services

Careful attention must be paid to the fact that several countries in the region such as Bangladesh, Bhutan, Cambodia, Myanmar, Nepal and Vietnam have no capacity to diagnose BSE. The diagnostic services for BSE in other countries of Asia are at different stages of development. Some use pathological examinations (4) (India, Malaysia, the Philippines, Singapore, Sri Lanka) or immunohistochemistry (4) (Thailand), while others use a combination of tests such as pathology, enzyme-linked immunosorbent assay (ELISA), Western blot (WB) and immunohistochemistry (Japan, Pakistan, Taipei China and the Republic of Korea). National reference laboratories for BSE are shown in Table X. Recently, the People's Republic of China

established two national reference laboratories and each Province has been requested to submit bovine brain specimens to these laboratories (1).

Diagnosis of bovine spongiform encephalopathy

The numbers of specimens tested for BSE in individual countries are shown in Table XI. Total numbers of animals tested for BSE are far too low in all the countries compared with the numbers tested in Japan and Europe where BSE has been detected. Vigorous efforts are required to improve the diagnostic capacities of countries in Asia to increase the numbers of specimens tested and the rapidity of the tests, to improve their reliability and reduce their costs. Although a joint OIE/FAO regional training course on diagnostic methods was held in Thailand in July 2002, more such training courses on the diagnosis of BSE and scrapie are required to upgrade the diagnostic capacity of countries in the region.

Risk management activities in the Republic of Korea

The Government of the Republic of Korea could not meet the deadline for the questionnaire due to outbreaks of foot and mouth disease in the country. However, the following summary report was received for inclusion in this paper.

Table X
Diagnostic services for bovine spongiform encephalopathy

Country/territory	Status
Bangladesh	No diagnostic services/no reference laboratory for bovine spongiform encephalopathy (BSE)
Bhutan	Not yet initiated (will send samples to Office International des Epizooties Reference Laboratories)
Cambodia	Not yet initiated
Hong Kong, China	Initiated in 1993 by immunohistochemistry at Tai Lung Veterinary Laboratory, Agriculture F.C. Department, Lin Tong Mei, Sheung Shui, Hong Kong
India	Initiated in 2000 by pathology at Indian Veterinary Research Institute, Izatnagar, Bareilly, Uttar Pradesh, India
Japan	Initiated in 1992 by all methods at NIAH, 3-1-5 Kannondai, Tsukuba, Ibaragi, Japan
Malaysia	Initiated in 2001 by pathology at Regional Veterinary Laboratory, Bukit Tengan, P.O. Box 63, 14007 Bukit Mertajam, Pulau Pinang, Malaysia
Myanmar	Not yet initiated but in preparation at the Central Veterinary Diagnostic Laboratory, Livestock Breeding and Veterinary Department, Station Road, Insein, Yangon
Nepal	Not yet initiated
Pakistan	Initiated in 1996 at the Veterinary Research Institute, Ghazi Road, Lahore or National Veterinary Laboratory, Park Road, Chak Shahzad, Islamabad
Philippines	Initiated in 2001 at the Philippines Animal Health Center, Visayas Avenue, Diliman, Quezon City, the Philippines
Singapore	Initiated in 1996 by pathology tests at the Central Veterinary Laboratory, 60 Seng Kang, East Way, Singapore
Sri Lanka	Initiated in 1997 by pathology at Veterinary Research Institute, P.O. Box 28, Gannoruwa, Peradeniya, Sri Lanka
Taipei China	Initiated in 1998 by all test methods at the National Veterinary Research Institute, 376 Chung-Cheng Road, Tansui, Taiwan
Thailand	Initiated in 1993 by immunohistochemistry at National Institute of Animal Health, Kaset-Klang, Bangkok, Bangkok 10900, Thailand
Vietnam	No response

Table XI
Diagnostic work performed (results of tests for bovine spongiform encephalopathy)

Country/territory	Status
Bangladesh	Nil
Bhutan	Nil
Cambodia	Nil
Hong Kong, China	Nil (there is a plan to monitor in slaughterhouses)
India	1998: 10 negative cases 1999: 8 negative cases 2000: 19 cases of rabies confirmed 2001: 5 cases of rabies confirmed
Japan	Between 1996 and March 2002, 654,354 samples were tested and 4 positive cases of bovine spongiform encephalopathy (BSE) were found. In August, 2002 another positive case was reported
Malaysia	In 2001, 120 samples were tested and all were negative on histology
Myanmar	Nil
Nepal	Nil
Pakistan	1998: 3 negative cases 1999: 3 negative cases 2000: 3 negative cases 2001: 3 negative cases
Philippines	2001: 50 negative cases 2002: 4 negative cases
Singapore	No clinically suspected cases identified
Sri Lanka	No BSE cases reported
Taipei China	Since 1998, 137 samples have been tested and all were negative
Thailand	Since 1990, 1,583 samples have been tested and all were negative
Vietnam	Nil

Traditionally, farmers in the Republic of Korea use fresh grass, hay and grains as feed for domestic ruminants and do not use any types of proteins or fats of animal origin.

No cattle, bovine semen or ova have been imported from the UK, Portugal, Switzerland, Liechtenstein or other European countries since 1993. Furthermore, importation of all materials possibly contaminated with the BSE agent has been banned from the UK (since March 1996), the Netherlands (since March 1997), 15 countries in the EU (since December 2000), 15 countries neighbouring the EU (since January 2001), Japan (since September 2001) and Israel (since June 2002). All the countries concerned, as well as the World Trade Organization (WTO), were informed of these precautionary measures. Additionally, when any meat, MBM or animal feedstuffs containing animal proteins or greaves are imported from countries with a low risk of BSE (such as the United States of America, Canada, New Zealand and Australia), the Government of the Republic of Korea requests that these commodities be accompanied by government certificates attesting the country of origin. These measures are taken to ensure that no materials containing the BSE agent are imported into the Republic of Korea.

In December 2000, when BSE began to appear in many countries in Europe, a ban on the use of feedstuffs containing MBM or BM was imposed, and in January 2001, feeding ruminants with wastes was prohibited. Feeds containing MBM and MM (including blood meal) produced in the Republic of Korea were used for pig, poultry and pet animals.

A national surveillance programme for BSE was implemented in 1996 and is carried out by the National Veterinary Research and Quarantine Service (NVRQS) and provincial veterinary services. In 1997, BSE was designated as a notifiable disease under the Act for Prevention of Livestock Epidemics. All cattle exhibiting signs of central nervous system disease are subjected to laboratory diagnostic tests for BSE. In addition, cattle submitted to the national laboratory to test for rabies are also tested for BSE. Other risk populations such as emergency slaughter cattle (for tuberculosis, brucellosis, etc.), fallen cattle and randomly selected healthy cattle over two years of age are also tested for BSE.

Brain samples are collected for laboratory tests using the spatula technique or by removing the whole brain. Demonstrating microscopic neuropathology and detecting pathological accumulation of scrapie-associated prion protein (PrP^{Sc}) by

immunohistochemistry (IHC) remain central to the diagnosis of BSE. Additional methods include demonstration of PrP^{Sc} by WB and ELISA, and scrapie-associated fibrils (SAFs) by electron microscopy. A total of 5,039 samples have been tested since 1996 and to date, no evidence of BSE has been detected in any of the brain specimens submitted. Only a small number of sheep is raised in the Republic of Korea, and no cases of scrapie have been reported.

Regular education and training programmes are held for farmers and veterinarians in the Republic of Korea to increase awareness of BSE and ensure notification of the disease. Since 1996, training programmes have been held for local official veterinarians on subjects such as identification of clinical signs, sampling methods and notification procedures. Furthermore, cattle producers are educated through seminars, booklets and mass media.

A standard operating procedure (SOP) for TSEs was established in February 2002 by the Ministry of Agriculture and Forestry (MAF) and the NVRQS. The SOP comprises five chapters entitled description of TSEs, emergency control procedures according to the stages of the diseases, responsibility of competent authorities, emergency measures and annex.

In summary, the Government of the Republic of Korea considers that the country is free from BSE for the reasons mentioned above.'

It must be added, however, that the data necessary to prove the claim for BSE freedom were not attached to the report and that there was no mention of chronic wasting disease (CWD) having recently occurred in the country.

Discussion

Farm lands in Asia (east of Pakistan) vary from semi-arid regions in western Asia to irrigated regions in eastern Asia. The livestock industry in Asia is characterised by a predominance of small farms rearing a variety of animal species. Commercial production of poultry and pork on large intensive farms has developed rapidly during the past few decades and these farms consume mass-produced feedstuffs. Sheep and goats are common in western Asia, but not in the irrigated regions. Cattle and buffalo are traditionally raised in Asia as draught power and their meat is not considered a main source of animal protein. However, intensive milk production farms have developed rapidly in some countries in Asia as the per capita income increased in recent decades in urban districts. Despite major efforts, the average farming system in Asia is still characterised by low inputs and low outputs, with the exception of a few industrialised countries and regions. Thus, in many developing countries in Asia, BSE is not considered by veterinarians and animal owners as a top priority issue as they are still preoccupied with common infectious, parasitic and nutritional diseases.

In some developing countries in south and South-East Asia, religious and/or cultural traditions prohibit the killing or rendering of cattle. Therefore, the risk of recycling the BSE agent through animal feeds produced in those countries is rather remote. On the other hand, large quantities of feedstuffs of ruminant-origin have been shipped from Europe to Asia (3), but most of these were probably consumed by poultry and pig producers. However, excluding the possibility that some of those imported feeds may have reached cattle, buffalo, sheep or goat farms in several countries in Asia is impossible, especially in those countries having imported large quantities of feedstuffs (see Chapter on 'Importation of by-products of ruminant origin'). In addition, the risk of cross-contamination at feed-mills and misjudgements of farmers cannot be ruled out as these errors have been observed in Europe.

To date, only three countries in Asia have been evaluated by the Scientific Steering Committee of the EU in response to the request of the EU to assess the geographical BSE risk (GBR) (2). According to the evaluation, Singapore was classified as Category 1 (BSE infection highly unlikely) and India and Pakistan as Category 2 (BSE infection unlikely, but not excluded) in 2001. The status of all the other countries in Asia, with the exception of Japan where BSE has occurred, still remains undetermined. The governments of those countries should be requested to conduct a more serious risk analysis and assessment of BSE in their countries, with or without external assistance.

The questionnaires sent in April 2002 were not intended to evaluate the BSE status of each country, but to review BSE risk management activities implemented in the past by Member Governments and to identify future requirements for prevention/control of BSE in Asia. As expected, most countries in Asia perform very poorly in risk assessment exercises. This is therefore the area where more intensive training efforts should be continued in the future.

Practically all importation of ruminant proteins from BSE-affected countries to Asia has been suspended, with the exception of Bangladesh and Hong Kong. It must be stressed, however, that import bans on MBM by Member Governments were, in most cases, imposed after the exporting countries had detected cases of BSE. In reality, much of the MBM imported prior to the bans could have been contaminated with the BSE agent. In all cases, further efforts are required to stop all imports of risk materials via those ports of entry in Asia. In addition, back-tracing systems should be improved to identify the real origin of imported commodities, such as MBM and greaves.

Although the numbers of rendering plants and their capacities are limited in most countries in Asia except Japan and Taipei China, completely excluding the possibility that ruminants infected with the BSE agent might have been recycled in all those countries where rendering of ruminant materials took place is impossible. Moreover, in some countries, the terms

'rendering plants' refer to plants which process meat waste only, and do not include the plants which render bones. These plants must also be considered as sources of risk for recycling of the BSE agent unless effective inactivation processes are employed.

At present, the most important measures consist of establishing very effective epidemiological surveillance systems for BSE in all countries in Asia, supported by well-trained diagnosticians both in the field and in the laboratories. Intensive training courses on subjects such as clinical diagnosis, sampling procedures, shipment methods, notification systems, etc., should be organised both at national and international levels. Simultaneously, selected laboratory specialists should be trained in the standard procedures for diagnosis of BSE and scrapie to upgrade the diagnostic services of almost all the countries in the region. The development of simplified diagnostic kits for BSE should be encouraged with a view to reducing the costs of each test so as to drastically increase the number of tests performed in developing countries.

Although the People's Republic of China did not respond to the questionnaires, some of the data included in the publication entitled 'Risk Analysis and Assessment of BSE in China' (1) published in 2000 provide information relevant to this study. The data of interest is reproduced below, as follows:

- risk analysis has been carried out and will be repeated every one to two years
- importation of ruminants and feedstuffs derived from ruminants from BSE- and scrapie-affected countries is banned
- publicity and public education programmes on BSE are performed regularly
- production of MBM and BM in the People's Republic of China was maintained at about 300,000 tonnes per year in 1995 and increased to 450,000 tonnes in 1998. Only 46.95% of the total was from ruminants and 53.05% from pigs. About 10% of cattle in the People's Republic of China are possibly fed with formulated feeds
- bovine spongiform encephalopathy and scrapie are notifiable diseases in the People's Republic of China. Long-term surveillance and testing of suspected cases are carried out
- policies, regulations and safety systems have been implemented to strictly ban feeding ruminants with feedstuff derived from ruminants

– national diagnostic laboratories have been established and each Province has been requested to submit at least 50 bovine brain samples yearly from BSE-suspected cattle over 24 months old

– two reference laboratories have been established at the National Quarantine Institute of the Ministry of Agriculture, Qingdao, and the Faculty of Veterinary Medicine, Agriculture University, Beijing.

Although the above information indicates that the People's Republic of China has carried out some studies to evaluate BSE risks, many essential data are not supplied, such as the exact quantities of imported feeds of ruminant origin, numbers of animals tested annually for BSE, etc. For example, according to Eurostat data, the People's Republic of China imported 4,153 tonnes of potentially contaminated feedstuffs including MBM and greaves from BSE-affected countries in Europe between 1991 and 2000 (3). Therefore, more comprehensive risk analysis and extensive epidemiological surveillance for BSE are essential if the People's Republic of China intends to prove that the country is free from BSE.

Finally, two other countries (Laos and Indonesia) did not respond to the questionnaire despite repeated requests. This is a matter of serious concern given that Indonesia imported over 300,000 tonnes of potentially contaminated feed materials unfit for human consumption from BSE-affected countries in Europe between 1988 and 2000 (Eurostat data), and demonstrates that very intensive surveillance programmes for BSE are a prerequisite for the livestock industry in the country. Considering the fact that most of the countries in Asia are trying to promote free trade of animals and animal products, utmost efforts should be made by all countries in Asia not to allow TSEs such as BSE, scrapie and CWD to establish a permanent foothold in the region.

La gestion des risques posés par les encéphalopathies subaiguës spongiformes transmissibles en Asie

Y. Ozawa

Résumé

Un questionnaire d'enquête a été adressé aux Pays Membres de l'Office international des épizooties (OIE) en Asie, en vue de savoir s'ils avaient recours à une gestion des risques en matière d'encéphalopathies subaiguës spongiformes transmissibles. L'auteur présente une synthèse des 16 réponses obtenues en juillet 2002.

L'enquête révèle que dix pays n'emploient pas systématiquement l'analyse des risques posés par l'encéphalopathie spongiforme bovine (ESB) à l'importation ; elle souligne dès lors la nécessité d'organiser d'urgence des stages de formation. Si les importations de ruminants à partir de l'Europe ont été relativement peu importantes, de grandes quantités d'aliments pour animaux issus de ruminants ont été importées en Asie. Par conséquent, l'introduction de l'agent responsable de l'ESB dans le cheptel national de la plupart des pays est probable. Ce risque extérieur a été ramené à des proportions acceptables dans la mesure où, au cours des dernières années, la majorité des pays asiatiques ont interdit l'importation d'aliments pour animaux provenant de pays contaminés par l'ESB. Toutefois, la persistance de quelques maillons faibles pourrait conduire à l'importation de matières à risque.

Si le recyclage de l'agent de l'ESB par les établissements d'équarrissage semble peu probable, il n'est pas totalement à exclure dans certains pays comme la République populaire de Chine, l'Inde, le Japon, le Pakistan et Taïpei China. Par conséquent, il convient de prévoir une gestion plus sévère des abattoirs et des établissements d'équarrissage dans ces pays, ainsi que la mise en œuvre de programmes de surveillance à grande échelle.

L'encéphalopathie spongiforme bovine n'est pas une maladie à déclaration obligatoire dans six pays, ce qui atteste de l'absence totale de gestion des risques posés par l'ESB dans ces pays. L'adoption par les pouvoirs publics de mesures immédiates visant à rendre obligatoire la déclaration de cette maladie est jugée nécessaire.

Le nombre de prélèvements analysés dans la majorité des pays asiatiques à des fins de dépistage de l'ESB est encore trop limité. Il est donc impératif d'améliorer sans tarder la qualité des programmes de surveillance en adoptant des méthodes modernes (et économiques) de diagnostic et en organisant des séances de formation consacrées aux systèmes de surveillance épidémiologique.

À l'exception du Japon, les travaux sur la tremblante en Asie sont rares, alors que la maladie fait l'objet d'une surveillance de routine en République populaire de Chine, en Inde, au Myanmar, au Pakistan et à Taïpei China.

Mots-clés

Analyse des risques à l'importation – Encéphalopathie spongiforme bovine – Encéphalopathie subaiguë spongiforme transmissible – Farine de viande et d'os – Gestion du risque – Tremblante.



Gestión del riesgo de presencia de encefalopatías espongiformes transmisibles en Asia

Y. Ozawa

Resumen

El autor resume 16 respuestas recibidas en julio de 2002 a un cuestionario enviado a los países de Asia miembros de la Oficina Internacional de Epizootias (OIE) para una encuesta sobre la utilización por estos últimos de la gestión del riesgo de encefalopatías espongiformes transmisibles.

La encuesta reveló que diez países no proceden sistemáticamente al análisis del riesgo de encefalopatía espongiforme bovina (EEB) asociado a las importaciones, lo que pone de manifiesto la urgente necesidad de organizar cursillos de perfeccionamiento. Aunque el número de rumiantes importados de Europa es relativamente reducido, Asia ha importado grandes cantidades de alimentos para animales derivados de rumiantes, lo que podría significar que el agente de la EEB está presente en el ganado bovino de la mayoría de los países asiáticos. El riesgo externo ha sido reducido considerablemente estos últimos años, puesto que la mayoría de los países de Asia han prohibido importar alimentos para animales de países infectados de EEB, pero persisten algunos puntos débiles que permiten la importación de materias de riesgo.

El reciclaje de la EEB en las plantas de procesamiento de residuos de matadero es muy poco probable, pero no puede excluirse totalmente en algunos países como la República Popular China, India, Japón, Pakistán y Taipei China. Por consiguiente, se impone instaurar en estos países un control mucho más riguroso de los mataderos y plantas de procesamiento, así como programas de vigilancia extensiva.

La EEB no hace parte de las enfermedades de declaración obligatoria en seis países de la región, lo cual significa que no existe ninguna gestión del riesgo de EEB en esos países. Los gobiernos deben pues tomar medidas inmediatas para incluir la EEB entre las enfermedades de declaración obligatoria.

El número de animales sometidos a pruebas de detección de la EEB es aún muy reducido en la mayoría de los países de Asia, lo que pone de manifiesto la necesidad de mejorar los programas de vigilancia de la enfermedad mediante la introducción de métodos de diagnóstico modernos (y asequibles) y la organización de cursillos sobre sistemas de vigilancia epidemiológica.

Salvo en Japón, el prurigo lumbar ha sido muy poco estudiado en Asia, aunque la enfermedad es objeto de un seguimiento sistemático en la República Popular China, India, Mianmar, Pakistán y Taipei China.

Palabras clave

Análisis del riesgo asociado a las importaciones – Encefalopatía espongiforme bovina – Encefalopatía espongiforme transmisible – Gestión del riesgo – Harina de carne y huesos – Prurigo lumbar.



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