

AHVLA Briefing note - 11 January 2012

Schmallenberg virus: a novel viral disease of cattle, sheep and goats in northern mainland Europe

History

Since August 2011, both the Netherlands and Germany have reported outbreaks of a disease in cattle, with clinical signs such as fever, reduced milk yield, inappetence, loss of condition and, principally in Dutch farms, diarrhoea. Herds experienced outbreaks of high morbidity (20-70%) lasting 2-3 weeks, with individual affected animals recovering over several days. Reports of disease occurred until the end of September, then declined and ceased by the end of October. In Germany, these reports were restricted to North Rhine Westphalia (European Commission, 2011), affecting about 80 farms. In the Netherlands, there were more than 120 affected farms mainly to the east of the country.

There have recently (November 2011 onwards) been reports of abortions and stillbirths associated with congenital (present at birth) abnormalities affecting mainly sheep but also cattle and goats: torticollis (twisted neck), arthrogryposis (limb contractures) and hydranencephaly (brain abnormalities). Such cases have been described in all regions in Netherlands, in Germany (North Rhine Westphalia and Lower Saxony) and in Belgium (East and West Flanders, Antwerp, Limburg and Brabant regions). No clinical signs were described in the dams. These findings are now reportable in the Netherlands (Netherlands Ministry of Agriculture, 2011) and in a high risk zone in Northern France (Alsace, Lorraine, Champagne Ardennes, Picardie and Nord Pas de Calais) (Anses, 2012).

Tests carried out by the Friedrich Loeffler Institute (FLI) in Germany initially ruled out Bluetongue, Epizootic Haemorrhagic Disease, Rift Valley Fever, Bovine Viral Diarrhoea and other pestiviruses, but 9 of 100 cases sampled from 14 farms in Germany were positive by PCR test for novel virus material. This was also identified in cases from the Netherlands (18 out of 50 samples from cattle with diarrhoea). In both countries the virus was not identified in areas without disease. The virus has been isolated, propagated, and shown to cause disease (fever, and diarrhoea) and viraemia in a small number of artificially infected cattle. It has also been identified in lambs and goats with congenital defects in the Netherlands (currently 55 positive sheep farms, 1 positive goat farm; but 82 cattle, 115 sheep and 7 goat farms with notifications of deformities in offspring / abortions), in Belgium in 17 sheep farms

(while 10 cattle and 1 goat farm also reporting deformities), and in 14 sheep farms (with six cattle farms reporting deformities and virus positive adults). Virus has also been isolated from a stillborn calf in Germany. The new virus has tentatively been called **Schmallenberg virus (SBV)**.

Characterisation of the SBV virus

Molecular studies indicated that the virus is novel, putatively belonging to the genus *Orthobunyavirus*, serogroup Simbu. Viruses from this group have some specific characteristics:

- They are spread by arthropod vectors, principally midges of the genus *Culicoides*, and mosquitoes.
- Many are found in wildlife and ruminant livestock
- Some from this group, such as Akabane virus, cause congenital defects in offspring of infected ruminant livestock. Affected newborn animals may have neurological disorders such as flaccid paralysis, blindness, exaggerated movements, hyperexcitability, and ataxia.

See

http://www.fli.bund.de/no_cache/de/startseite/aktuelles/tierseuchengeschehen/schmallenberg-virus.html for more information

Situation assessment

There are still many uncertainties around this new virus, such as the vector responsible for transmission, the geographic distribution, transmissibility of infected animals and the virus origin. The virus has been isolated, but as there is no serological test (to detect antibody produced against the virus) available at present, serological surveillance is not possible. This currently hampers our ability to look for historic infection, but a serological test is close to being developed by scientists in the Netherlands and Germany.

Since the UK was made aware of the situation in late August 2011 we have been carrying out enhanced scanning surveillance in cattle (see below). No similar reports of clinical signs in the UK have been made. The more recent reports of abortions and congenital deformities are of concern and heightened awareness in animal keepers is recommended over the coming months, with a request to report concerns to their veterinary surgeon.

The likely risk pathways for entry of disease into GB are

- Inapparently infected cattle, sheep and goats may have been imported during 2011 from the affected area and could have been exposed to the virus during pregnancy with an increased risk of developmental abnormality.
- Windborne incursion of infected arthropod vectors

This is not a notifiable disease, and as such there are no trade restrictions in place. There are no control measures in place in any of the affected countries in the EU.

Those considering importing ruminants from the mainland Europe are advised to consult with their private veterinary surgeons in advance of purchase.

Human health risk: Since a small number of Orthobunyaviruses are zoonotic (transmissible from animals to humans), the Netherlands RijksInstituut voor Volksgezondheid en Milieu (RIVM) carried out a risk profile and considered that zoonotic transmission of SBV to humans cannot be excluded but is considered unlikely.

<http://www.rivm.nl/dsresource?objectid=rivmp:60483&type=org&disposition=inline>

This assessment has been confirmed by the assessment of the European Centre for Disease Prevention and Control (ECDC): see

http://www.ecdc.europa.eu/en/publications/Publications/231112_TER_Risk_assessment_Schmallenberg_virus.pdf

Mitigating measures implemented

- Scanning surveillance: since August 2011 GB has undertaken enhanced surveillance for signs of disease in adult cattle, on a monthly basis, which will continue into 2012. No unexplained signs have been detected.
- Targeted surveillance
 - Raising awareness:
 - A letter has been sent to appropriate farming industry bodies warning them of the signs seen in adults and aborted/newborn ruminants, encouraging farmers to submit affected animals to AHVLA/SAC laboratories
 - Farm vets have been similarly alerted
 - Disease investigation:
 - AHVLA and SAC vets are aware;
 - clinical and pathological case definitions have been produced

- Investigation protocol: a detailed protocol for investigation of congenital ruminant malformations has been developed by AHVLA, SAC and the Moredun Institute, together with a database for collating case information
- Meteorological studies: The Met Office has produced a list of days when incursion of potentially infected midges from the affected areas on the continent to the UK was possible during the risk period end July- November 2011, using the NAME model developed for bluetongue investigation. There were 4-8 days per month during this period when conditions were suitable for transport of midges from the Belgian and Dutch coast, and the counties of Sussex, Kent, Essex, Suffolk and Norfolk may have been at risk during this period.
- Collaboration
 - With EU colleagues: knowledge sharing
 - With health colleagues: to ensure awareness and close collaboration
- Test development
 - A PCR test has been acquired from FLI for GB use
 - Serological testing will be made available through collaboration with European colleagues

Conclusions

- Zoonotic transmission of SBV to humans is considered unlikely.
- There is no evidence to date of the presence of disease in adult GB cattle during the risk period seen on the continent (ie July- November 2011). It is proposed that further testing of archived samples could determine whether the virus has been in Northern Europe previously.
- The risk of vector-borne disease is currently very low as GB is in its vector-free period but recurrence of as yet undetected infection is a possibility later in the year.
- The occurrence of congenital abnormalities is possible and is being monitored; likewise this raises the possibility of recrudescence of infection later in the year, potentially from congenitally infected animals.

Please note that knowledge of SBV is changing rapidly. The briefing above gives our knowledge to date, and will be updated to reflect changes as our understanding develops.

References

ANSES (2012) A new orthobunyavirus in North Europe? <http://www.anses.fr/bulletin-epidemiologique/Documents/BEP-mg-BE47preart03.pdf>

European Commission (2011) New orthobunyavirus detected in cattle in Germany. http://ec.europa.eu/food/committees/regulatory/scfcah/animal_health/presentations/06122011_new_orthobunyavirus_in_cattle_germany.pdf

Netherlands Ministry of Agriculture (2011) Letter on the background and current developments of Schmallenberg virus in the Netherlands. <http://www.government.nl/news/2012/01/05/new-confirmed-cases-of-schmallenberg-virus-in-the-netherlands.html>