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Brief Communication

A FIELD OUTBREAK CAUSED BY BOVINE RESPIRATORY SYNCYTIAL VIRUS

Bovine respiratory syncytial virus (BRSV) caused a large epizootic of acute respiratory disease in Japan in 1968—69 (*Inaba et al.* 1970, *Inaba et al.* 1972). A much smaller outbreak occurred in Switzerland (*Paccaud & Jacquier* 1970). In Belgium the virus has been isolated from an outbreak of respiratory disease (*Wellemans et al.* 1970). BRSV has later been proved an important causal agent of respiratory disorders in the same country (*Wellemans & Leunen* 1975). In England and USA the virus has caused and been isolated from outbreaks of acute respiratory disease in calves (*Jacobs & Edington* 1971, *Rosenquist* 1974, *Smith et al.* 1974). In Denmark BRSV has sporadically been isolated from pneumonic calf lungs (*Bitsch et al.* 1976).

During the early summer of 1976 there was an outbreak of contagious respiratory disease in cattle in the south-western part of Norway. The disease was rapidly spread. In some districts almost 100 % of the herds were affected, while in the other areas the corresponding figures were 70—80. At midsummer the first cases were reported in the central-eastern part of Norway, and within the late fall the apparently same disorder had spread to most districts in this part of the country.

Over long distances the infection was obviously carried by the transport of live animals. However, the main way of spreading the disease was indirect contact by way of traffic between farms. All age groups proved susceptible to the infection, and most animals within a herd were affected. The most common clinical signs were fever of varying degree (up to 41.5° C), anorexia, forced respiration with coughing, watery or mucopurulent nasal discharge, conjunctivitis and salivation. Some animals were more seriously affected than others. In some cases extensive subcutaneous emphysema developed all around the body. There was a drastic fall in the milk production. In the north-western part of the affected territory there was also some diarrhea in addition to the respiratory disease. The case fatality

rate was very low. However, deaths did occur, and post-mortem examinations revealed extensive hemorrhages with epithelial damages in the trachea and the bronchi. There were moderate bronchopneumonic lesions and marked interstitial emphysema.

Nasal swab samples were collected from many herds and cases and were inoculated into cultures of bovine cells for virus isolation. Rather early in the outbreak parainfluenza-3 virus was isolated from 2 herds. However, hemagglutination inhibition tests carried out on paired serum samples showed no rise in antibody titer to this virus. Paired sera were also tested for increased production of antibodies to virus diarrhea/mucosal disease virus, infectious bovine rhinotracheitis virus, adenovirus, parainfluenza-2 virus and even influenza A- and B-virus. All these tests were negative. From 1 nasal swab sample there was finally isolated an agent causing syncytia in a continuous cell line of bovine turbinate (BT) cells (NADC, Ames, Iowa, USA). Syncytial cells appeared in the cultures after about 18 days of incubation. In subsequent passages this period of time was reduced to 7—10 days. Acidophilic inclusion bodies could be demonstrated in the cytoplasm. The cytopathic effect was neutralized by a known antiserum to BRSV, and the virus also identified by immunofluorescence with a known conjugate. Acute and convalescent sera collected from cases were tested in neutralization tests and by indirect immunofluorescence for antibodies to a known BRS-virus. In most cases tested so far there were seroconversions giving convincing evidence of the BRS-virus as etiological agent in the outbreak. However, no definite serological diagnosis has so far been made on samples originating from the north-western part of the affected territory.

A preliminary inoculation of the isolated virus was done in a calf. The animal developed mild clinical signs, virus was reisolated from the upper respiratory tract, and production of antibodies was demonstrated.

The character of the outbreak suggests that the present stock of Norwegian cattle has not previously been exposed to BRSV.

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