

AN OUTBREAK OF EQUINE VIRAL ARTERITIS ABORTION IN BELGIUM

Een uitbraak van abortus tengevolge van equine virale arteritis in België

K. van der Meulen¹, A. Caij², H. Nauwynck¹, M. Pensaert¹

¹Laboratory of Virology, Faculty of Veterinary Medicine, Ghent University
Salisburylaan 133, 9820 Merelbeke, Belgium

²Veterinary and Agrochemical Research Centre
Groeselenberg 99, 1180 Brussels, Belgium

ABSTRACT

This case report describes the first recorded clinical outbreak of equine viral arteritis on a stud in Belgium. Abortion was the only clinical sign observed. Virus was isolated and identified by means of an immunofluorescence staining. Serological examination showed that 95,5% of the horses were positive for antibodies to equine arteritis virus.

SAMENVATTING

In deze casuïstiek wordt de eerste klinische uitbraak van equine virale arteritis op een stoeterij in België beschreven. Abortus was het enige waargenomen symptoom. Virus werd geïsoleerd en geïdentificeerd met behulp van een immunofluorescentiekleuring. Serologisch onderzoek toonde antistoffen aan tegen equine arteritis virus bij 95,5% van de paarden.

Keywords: Horse - Abortion - Equine arteritis virus

INTRODUCTION

Equine viral arteritis (EVA) is an infectious disease of horses caused by a small, enveloped, single-stranded, positive-sense RNA virus classified in the family of *Arteriviridae* in the order *Nidovirales* (Cavanagh, 1997). Serological surveys show that equine arteritis virus (EAV) has a worldwide distribution and occasional outbreaks of the disease have been reported in North America (de Vries *et al.*, 1996) and several European countries, such as the Netherlands (van Gorkom *et al.*, 1994), Germany (Ahlsvede *et al.*, 1999), Great Britain (Wood *et al.*, 1995) and France (Zientara *et al.*, 1995). Clinical signs during an outbreak vary widely among individual horses and between outbreaks (de Vries *et al.*, 1996). Fever and leucopenia are the most consistently observed clinical features. In addition, anorexia and depression, oedema, conjunctivitis, respiratory disorders, urticaria, icterus, gastrointestinal disorders, weakness and unsteady-

ness, photophobia, opacity of the cornea and submandibular/submaxillary lymphadenopathy may be observed. Abortion in pregnant mares is often seen and closely linked with the late febrile or early convalescent phase of the infection. Abortion can occur even if no clinical signs are noticed.

In Belgium, a serological analysis carried out in 1997-1998 showed that 16 of 165 horses (10%) tested positive for antibodies to EAV (Lauwers, unpublished data), but no outbreaks had been reported until now.

CASE HISTORY

In September and October 2000, a severe outbreak of abortion due to an infection with EAV occurred on a Belgian stud with Arabian horses and Shetland ponies. The first case occurred on the 10th of September and, within a time period of one month, eight of eighteen pregnant Arabian mares aborted. A ninth abortion occurred on the 11th of November. All the

mares aborted between the fourth and the seventh month of gestation. Besides the nine mares that aborted, three other mares that had previously been confirmed pregnant were seen in heat again. No other clinical signs were observed.

LABORATORY EXAMINATIONS

Pathological examination

A gross pathological examination showed that the aborted foetuses were in an either fresh or autolytic state. Two foetuses were examined in more detail. One foal showed a severe degeneration of the thymus and the liver, with necrosis of the hepatocytes. The other foal showed a degeneration of the liver, an increase in spleen volume and hemorrhagic fluid in pleural and peritoneal cavities. No viral inclusions were observed.

Virological examination

Virus was isolated from the lungs, thymus, spleen and liver of one aborted foetus and from the lungs of another aborted foetus. Virus isolation was performed by inoculation of suspensions (20% w/v) of the tissues onto a monolayer of rabbit kidney (RK-13) cells and incubation at 37°C in an atmosphere containing 5% carbon dioxide. Rounding and vacuolization of the RK-13 cells were observed after one day of incubation and, after two days, most of the cells were detached from their support.

The virus isolate was identified by means of an indirect immunofluorescence staining using an equine polyclonal antiserum raised against EAV and three mouse monoclonal antibodies, two directed against the GL protein and one directed against the M protein of EAV.

Serological examination

Blood samples were collected two months after the first abortion had occurred and sera were tested for EAV-specific antibodies by a standard seroneutralisation (SN) test on RK-13 cells using the prototype Bucyrus strain of EAV as a reference strain. Of the 89 tested horses, 85 (95.5%) were positive. The titres ranged from 1:8 to 1:256, with 90% of the horses showing titres between 1:32 and 1:256.

DISCUSSION

This is the first recorded clinical outbreak of EVA in Belgium. Remarkably, abortion was the only clinical sign observed. This suggests that the foetal expulsion was the result of a lethal foetal infection (Doll *et al.*, 1957) or a necrotic maternal myometritis (Coignoul and Cheville, 1984), rather than of a systemic vascular necrosis or fever in the mare. How the outbreak was initiated remains unclear. The virus may have been introduced into the stud by a stallion which had attended a show two weeks before the outbreak started, but other possibilities of introduction cannot be excluded. The presence of persistent virus shedders among the stallions is currently under investigation.

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