Viral Infections in Horses in Iceland (28-Jun-2004)
V. Svansson
Institute for Experimental Pathology, University of Iceland, Keldur, Reykjavík, Iceland.

The native Icelandic horse is the only horse breed in Iceland. The horses were brought to the country during the early Viking settlement in the 10th century. After time there are no records of import of horses until in 1867 when an Icelandic gelding was reimported to Iceland.

Due to the geographic isolation the genetic selection of the breed has mainly been determined by volcanic activity and harsh weather conditions rather than infectious diseases. This may have reduced the resistance of the breed to some of the agents known to infect horses worldwide.

Although import of live animals with the potential of transmitting pathogens has been minimal through the ages, there are two records in the 19th century of contagious diseases in Icelandic horses. The first epidemic was in the summer of 1805. The main clinical symptoms were fever and respiratory illness. Similar disease although less severe started in horses in the north of Iceland in the early summer of 1833 and was then transmitted to other part of country. In both these outbreaks all horses seemed to be susceptible indicating new introductions of the infectious agents. Since then there have been no major outbreaks of disease with viral character in the Icelandic horse population until February 1998 when an epidemic of infectious pyrexia occurred.

The pyrexia was first observed in horses on a training station in the Reykjavik area. Only few horses were affected during the first days and they were thought to be suffering from food borne Listeriosis. One week later similar cases were noted in other stables and in the next days the contagious nature of the disease was confirmed. From the primary foci in Reykjavik the disease spread clockwise and counterclockwise throughout the country. The epidemic was over in October but few cases were recorded on isolated farms in remote areas in East-Iceland until February 1999.

According to the main clinical symptoms the disease was named infectious pyrexia (IP). Some horses got diarrhea after having high fever and a few were affected by severe colic as a complication. Eclampsia in mares prepartum or in early lactation was commonly seen especially if the weather conditions were critical. Gross macroscopic lesions were mainly seen in the small intestine the first part of colon. Histological examination reviewed hyperemia and swelling of the mucosa and atrophy of the intestinal villi. Faeces from affected horses was found to be infectious. Clinical signs, negative bacterial isolation together with the mode of transmission strongly pointed toward a viral infection. In spite of extensive virological investigations no viruses previously known to infect horses could be connected to the disease.

Virus isolation attempts, electron microscopical examinations and experimental infection of foals indicate that the cause of the epidemic was non-cultivable virus most likely belonging to the picornaviridae family. The virological examinations of the infectious pyrexia added a new information to our knowledge of viral infections in the Icelandic horse population and revealed the unique infection status of the population. At present indications of 9 different virus infections have been found in horses in Iceland. Clinical symptoms of equine papilloma virus can often be seen in young horses. Lesions resembling equine coital exanthema caused by *Eq. herpesvirus* 3 have been noted and two gammaherpesviruses, EHV-2 and 5, have been isolated. In serum samples antibodies to *Eq. rhinopneumonitis* virus (*Eq. herpesvirus* 4 (EHV-4) *Eq. rhinovirus* 1 and 2, Bernevirus and coronavirus have been detected. There is no record of when these viruses were introduced to the Icelandic horse population; some of them have probably been endemic since the Saga age. The clinical relevance of infections with some of these viruses remains uncertain as their presence has been identified without any connection to clinical disease.
Growing popularity of the Icelandic horse and increase of travelling between countries offers a new threat to the infectious status of the Icelandic horse population.
In the spring 2004 a new disease was noted in horses in Iceland with almost 100% morbidity. The only clinical symptom was kerato-conjunctivitis. Preliminary investigations strongly indicate a infection with *Eq. adenovirus* type 1, a new virus on the growing list of viruses infecting horses in Iceland. This once again is a reminder of how vulnerable the immunologically naive horse population in Iceland is to new introduction of viruses endemic in horses outside Iceland.

All rights reserved. This document is available on-line at www.ivis.org. Document No. P1117.0604.