EPIDEMIOLOGY OF EQUINE HERPESVIRUS INFECTIONS

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ABSTRACT

The epidemiology of infections with equine herpesvirus (EHV) types 1 and 2 in foals on a Thoroughbred stud in New Zealand was investigated. As part of this study an ELISA test was developed to measure antibody titres to EHV-2 in equine sera. All the sera collected from the foals before the ingestion of colostrum were negative for antibodies to both EHV-1 and EHV-2. Soon after sucking, these foals had serum antibody levels against these two viruses similar to those of their dams. The maternally derived antibody to EHV-1 lasted for 3-4 months and antibody titres rose again at around weaning time. In contrast, passively acquired antibody to EHV-2 was rapidly supplemented by actively produced antibody.

Serological evidence suggested that most of the foals (85%) became infected with EHV-1, and 25% were reinfected in their first ten months of life; however EHV-1 was not recovered either from these mares or their foals during the investigation period despite the large increase in antibody titres. Serological evidence of EHV-1 infection in foals indicated that this occurred around the time of weaning when the maternally derived antibody had declined to a level which was presumably unprotective. The clinical signs which developed after EHV-1 infection were very mild, the main symptom observed being a profuse nasal discharge usually lasting two or three days, occasionally with an elevation of body temperature. The source of EHV-1 infection in foals could not be determined and there was no evidence to suggest that their dams were infected with EHV-1 around the time when the foals became infected. However, a relationship between preinfection antibody titres ($\log 10^3$) against EHV-1 and the viral infection was observed.

In contrast, EHV-2 was isolated from all of the foals by 2 to 4 months of age. The virus infection persisted in these animals for 2 to 6 months and stimulated continuous production of antibody. As soon as the antibody level against EHV-2 reached a peak, the

isolation of the virus decreased, and eventually EHV-2 was no longer isolated from these foals by 9 months of age. The foals possibly contracted EHV-2 infection from their dams since some of them excreted the virus around the time when EHV-2 was isolated from their foals. Clinical reactions at around the time of EHV-2 infection varied from foal to foal, ranging from subclinical to fever, mucopurulent nasal discharge and swollen submandibular lymph nodes. Two severely affected foals from which EHV-2 was isolated died of complications resulting from secondary bacteraemia. From these findings, an association between EHV-2 and the respiratory disease observed in these foals was postulated. However, the possible role of EHV-2 as a pathogen for young foals needs confirmation by further studies including experimental infection of gnotobiotic foals.

A trail for evaluation of Pneumabort-K (an EHV-1 subtype 1 vaccine) was conducted in these foals. Animals inoculated with the vaccine at the age of 30 and 60 days failed to respond serologically to the immunization, and it was assumed that this was due to the intereference of the high levels of passively acquired antibody. Based on this observation, another EHV-1 vaccination procedure for foals commencing at 80-90 days was recommended.

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