

Equine Herpesvirus Myeloencephalopathy

Dr. Jagdish Patel, Surveillance Veterinarian, Food Safety Division, Edmonton, AB

Equine Herpesvirus-1 (EHV-1), an alphaherpesvirus, is associated with abortion, neonatal septicemia, myeloencephalopathy and upper respiratory disease in older foals, weanlings and adult horses. The disease is endemic in North America and many horses have serum antibody titers either due to natural infection or subsequent to vaccination.

Following natural infection, horses often become latently infected; the duration of the latency is unknown but assumed to be lifelong. Latent EHV-1 virus is detectable in the trigeminal ganglion and CD5/CD8 lymphocytes and reactivation of the virus does not result in clinical disease in the host but the virus is shed in nasal secretions. These clinically normal latent carriers are often the point source of the virus that infects susceptible animals during periods of activation and virus shedding.

EHV-1 myeloencephalopathy occurs as sporadic cases but often an epizootic within a stable, barn or locality have been reported. Recent reports of numerous outbreaks of equine herpesvirus-1 neurologic disease have been attributed to a hyper-virulent neuropathogenic strain of EHV-1. A single tiny mutation within the genome of the virus has enhanced the replicative ability of the virus. The mutant neuropathogenic EHV-1 virus replicates to very high levels in the upper respiratory tract, blood leucocytes and vascular endothelium of the infected horse thereby shifting the pathogenicity towards more severe morbidity and greater mortality.

Susceptible horses get infected after direct or indirect contact to a latent carrier or to other horses that have come in contact with the latent carrier. Recent surveillance studies at the University of Kentucky Livestock Disease diagnostic Center indicate that approximately 6% of today's horses are latently infected with the neuropathogenic genotype of EHV-1. Contrary to previous supposition, it is now recognized that horses with clinical signs of myeloencephalopathy can spread the disease to other horses and therefore hospitalizing affected horses at veterinary facilities pose a source of infection to other patients in the hospital.

EHV-1 myeloencephalopathy in horses is as a result of vasculitis, thrombosis and subsequent ischemia of neural tissue. Fever often precedes signs of neurologic disease by 1-3 days and the onset of neurologic signs is usually rapid. Signs are usually referable to spinal white matter involvement and affected horses have variable degrees of ataxia and paresis manifested by stumbling, toe dragging, pivoting and circumduction that is more severe in hind limbs. Hypotonia of tail and anus as well as urinary and fecal incontinence are common. Urine scalding due to urine dribbling and rectal impaction is often sequel. Progression to hemiplegia and paraplegia lead to recumbancy. Less commonly, cranial nerve deficits such as lingual or pharyngeal paresis (rabies alert!!), head tilt, nystagmus and strabismus are present.

Brain or spinal cord of horses with nervous disease can be sent for virology for confirmation and fixed brain and spinal cord from several sites as well as an entire eye should be sent for histopathological examination. Serology on paired serum samples and demonstrating a three to four fold rise in serum antibody titers provides evidence of recent infection.

Other neurologic diseases with similar presentation include Eastern equine Encephalomyelitis, rabies, West Nile Virus encephalitis, Equine protozoal myeloencephalitis, Equine polyneuritis and trauma. Ingestion of toxic plants such as *Astragalus* spp, *Swainsonia* spp, Sorghum or Rye grass may show signs of ataxia and posterior paresis. Since vaccination offers no protection against EHV-1 myeloencephalopathy, stress free environment, effective segregation and optimal bio-security protocols would help reduce the chances of introducing and spreading the disease within a barn.

1. Veterinary Medicine 10th edition 2007 Radostits, Gay, Hinchcliff, Constable
2. Animal Health Perspectives Vol 3, Issue 4, November 2007 Godson Dale

3. Equine Disease Quarterly Ap 2007, http://www.ca.uky.edu/gluck/q_apr07