GenBank. From these serial results the parasite was identified as N.caninum.

Discussion

Neosporosis occurs rarely in adult dogs [Lorenzo & Pumarola,2002; Cantile & Arispici, 2002; Greig et al.,1995] and the present case is the first occurrence in an adult dog in Japan. The occurrence at 7 year-old-age made clinical diagnosis of neosporosis difficult, even if recurrence by the treatment was unexpected. In addition, no etiological information, such as the contact with another animals or occurrence of resembling neurologic diseases in the neighborhood was obtained. In the present study, neosporosis was suspected histopathologically and its differential diagnosis was completed by IHC and gene analysis.

Multiple granulomatous myositis seemed to be one of the characteristics of neosporosis as well as meningoencephalitis[Dubey & Lindsay,1996; Itoh & Uchida,2001; Umemura et al.,1992]. In the present case, the same lesions were observed also in the ocular muscles. Other muscles were not observed unfortunately because of poor information about neosporosis, there was a possibility to make clinical diagnosis if muscle biopsy was performed.

P#3

The Histopathogenesis of Paralytic Rabies in Six-week-old C57BL/6J Mice Following Inoculation of the CVS-11 Strain into the Right Triceps Surae Muscle

Park CH[(1)], Inoue S[(2)], Kondo M[(1)], Noguchi A[(2)], Oyamada T[(1)], Yoshikawa H[(1)] and Yamada A[(2)]

[(1)]Department of Veterinary Pathology, School of Veterinary Medicine and Animal Sciences, Kitasato University, Towada, Japan and [(2)]Department of Veterinary Science, National Institute of Infectious Diseases, Tokyo, Japan

Tel: +81-176-23-4371 (Ext.434);

Fax: +81-176-23-8160;

E-mail: baku@vmas.kitasato-u.ac.jp

Rabies is an ancient disease that is still endemic in many parts of the world. Rabies virus is a highly neurotropic virus that causes fatal encephalomyelitis in humans and animals; however, the precise histopathogenesis including invasion routes from the periphery to the central nervous system (CNS) are not known.

In this study, fixed CVS-11 strain was inoculated into the cerebrum and peripheral muscles of adult C57BL/6J mice, and the primary target cells and the sequential involvement of major regions during infection in peripheral tissues and CNS were compared. A fatal encephalomyelitis developed after intracerebral and hind limb inoculation of six-week-old C57BL/6J mice with fixed rabies virus (CVS-11 strain). With intracerebral inoculation, virus antigens were first detected in the cerebral cortex and hippocampus at two days post-inoculation (PI), and virus later spread centrifugally to the thalamus, brain stem, cerebellum, spinal cord and spinal ganglia. At four days PI, strong morphologic changes of apoptosis and DNA fragmentation were particularly evident in the hippocampus and cerebral cortex. All infected mice died without limb paralysis at 10 to 11 days PI.

In contrast, antigens were persistently detected in myocytes from two days PI at the site of inoculation of mice infected intramuscularly. At three days PI, virus antigens were demonstrated in the spinal dorsal root ganglia, spinal cord and muscle spindles, before their detection in the cerebrum and hippocampus. There were no findings of apoptosis in the spinal and dorsal root ganglia, in spite of many infected neurons. Electron microscopy confirmed the presence of viral inclusions and virus particles in the cytoplasm of degenerated neurons or myelinated axon. Hind limb paralysis was found in all infected mice; this progressed to quadriparalysis, and all infected mice died between days 11 to 13. Inflammatory cells were observed in the spinal and dorsal ganglia neurons from four days PI.

Therefore, the results of this study demonstrate that paralysis in C57BL/6J mice infected with CVS-11 strain is caused by necrosis of spinal neurons and host immune reactions, rather than by severe cerebral infection and apoptosis. The virus, which primarily replicated in the muscles, was considered to ascend the spinal cord via afferent fibers and then retrogradely to invade the cerebrum, with subsequent centrifugal virus spread to muscle spindles.

Key words: Histopathogenesis, Encephalomyelitis, Rabies (CVS-11), C57BL/6J mouse

P#4

A Case of Spindle Cell Sarcoma in an American Buffalo *(Bison bison bison)*

Nam-Yong Park

Department of Veterinary Pathology, College of Veterinary Medicine, Chonnam National University, Gwangju 500-757, Republic of Korea
Tel: +82-62-530-2843; fax: +82-62-530-2847;
E-mail address: nypark@chonnam.ac.kr

A case of spindle cell sarcoma in multiple organ systems in a 20-year-old male American Buffalo *(Bison bison bison)* from Gwangju Zoo, Republic of Korea was studied. The animal showed no apparent clinical signs before death. Grossly, neoplastic nodules were observed in the skin, lung, heart, liver stomach, mesentery and kidney in various sizes. Most of the neoplastic nodules histologically were composed of fusiform cells that formed multidirectional bundles. Tumor cells were arranged in interlacing bands and bundles. Nuclei were atypical, hyperchromatic, blunt or round ends and with few mitotic figures observed in skin, lung, heart, liver, stomach, intestine and kidney Several marker immunostains were used in an attempt to differentially diagnose the tumor· vimentin, CD4, cytokeratin (CK), actin, smooth muscle actin (SMA) and S-100. Vimentin showed positive results but negative for CD4, CK, actin, SMA and S-100. Because of the above findings we concluded that this case is highly compatible with spindle cell sarcoma. Spindle cell sarcoma is a rare neoplasm and as far as we are concerned this is the first reported case in American Buffalo *(Bison bison bison)*.