COMPARATIVE NEURO-HISTOPATHOLOGICAL STUDIES ON CONGENITAL ANOMALIES CAUSED BY AKABANE AND BOVINE VIRAL DIARRHEA-MUCOSAL DISEASE VIRUSES

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Pathological observations were done on the central nervous system, especially on the cerebrum and cerebellum, in 29 calves affected with Akabana disease (AD) and in 3 calves affected with congenital anomalies caused by fetal infection with bovine viral diarrhea-mucosal disease virus (BVD-MD).

In the cerebrum, inflammatory necrotic lesions and focal loss of the gray matter were observed in AD, whereas edema of the white matter, disruption of the ependymal lining of the ventricular system, and periventricular proliferation of neuroglial fibers were conspicuous in BVD-MD. From these findings, it was concluded that the cerebral lesions of BVD-MD were caused by increased cerebrospinal fluid (CSF) pressure and did not suggest a direct effect of the virus infection. In brief, the lesions in BVD-MD were regarded as hydrocephalus, and it was considered that non-communication between the fourth ventricle and the sub-arachnoid space was responsible for increased CSF pressure from which the hydrocephalus resulted.

In the cerebellum, on the other hand, inflammatory necrotic lesions, cavitation, depletion of granular cells, and ectopia of Purkinje cells were prominent in BVD-MD, while only heterotopic cortical tissue and focal loss of the cortical tissue were found in AD. It was considered that the lesions in AD occurred after the laminar architecture of the cerebellar cortex was differentiated to a certain degree, because the well-defined molecular and granular cell layer tissues were present without granular and Purkinje cell decreases.

From the results obtained here, it was concluded that the cerebral and cerebellar lesions of AD and BVD-MD were different from each other histopathologically and pathogenetically.