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Desmoplastic epithelioid olfactory neuroblastoma in a Distemper Virus infected dog.

A 5 years old male Swiss Shepherd dog, regularly vaccinated for Canine Distemper Virus (CDV), Canine Adenovirus, Canine Parvovirus type 2 and Leptospirosis till 4 years old, was referred for seizures, epistaxis of the right nostril, and ipsilateral eye lachrymation. The patient demonstrated ataxia and behavioural alterations, even aggressiveness against owners. Blood analysis did not show significant changing, but Quick test (Whitness®) was positive for CDV. Cerebrospinal fluid cytology revealed moderate mononuclear pleiocytosis, and a RT-PCR analysis identified the presence of CDV genome. No magnetic resonance (MRI) was performed (not accepted by owners). Feline recombinant Ω -interferon (VirbagenOmega®) was used at 2.5 UM/kg IV for 3 consecutive days, twice in one month, to treat CVD infection (1). The follow-up period of 3 months highlighted a progressive worsening of the patient's conditions, leading to euthanasia.

Necropsy revealed a stringy exudate in the right frontal sinus and an irregular, brown-white firm neof ormation in the right frontal lobe, compressing the contiguous cerebral parenchyma . Microscopically, the neof ormation was infiltrative and composed by round-to-oval cells supported by hypocellular zones of delicate fibrillary stroma. Immunohistochemistry (IHC) revealed multifocal, isolated or organized in small clusters, immunopositivity for cytokeratins, neuron enolase (NSE) and neurofilaments (NF) in the tumour cells; moderate to severe immunopositivity for vimentin, glial fibrillary acidic protein (GFAP) and S100 in the stroma. Moderate and disseminated vacuolization of the white matter associated with digestion chambers, glial cells and small vessels proliferation, and a mild non suppurative inflammation were also detected in the cerebral cortex, mesencephalon and pons, suggesting demyelination compatible with CDV lesions. IHC for CDV was negative. The gross and microscopic features were consistent with the diagnosis of the concomitant presence of an olfactory neuroblastoma (ONB) associated with a non suppurative demyelinating encephalitis likely due to pre-existing CDV infection. The negative results obtained by IHC for CVD could be due to the previous treatment with feline recombinant Ω -interferon: a high antiviral activity of this specific interferon was described by Wang et al. (1) on CDV infected culture cells. In veterinary medicine, previous studies reported a positive staining of ONBs for NSE (2), whereas GFAP, NF and cytokeratins were most frequently immunonegative (3). A strong cytokeratin expression was reported in canine olfactory neuroepithelioma (4) and a limited immunopositivity in both tumour and supporting stroma was observed in canine ONB (5). To the best of the authors' knowledge, this is the first description of a simultaneous presence of an ONB and CDV brain infection in a dog, but it is impossible to establish a correlation between these two pathologies.

1)Wang H, et al. Sheng Wu Gong Cheng XueBao 2008;24:1556-60. 2)Brosinski K, et al. J Comp Pathol 2012;146:152-9. 3)Ide T,et al. Vet Pathol 2010;47:741-50. 4)Hara K, et al. J Vet Med Sci 2002;64:391-3.5)Capucchio MT, et al. Clin Neuropathol 2003;22:176-9.