



ORAL COMMUNICATION(S)

POST-VACCINAL DISTEMPER IN A LITTER OF LABRADOR RETRIEVER FROM SICILY: FROM CLINICAL PRESENTATION TO VIROLOGICAL AND SEROLOGICAL INVESTIGATIONS

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Vaccination against canine distemper virus (CDV) is considered "core" and is being widely applied to reduce the global incidence of CDV. This modified-live vaccine (MLV) has been historically associated with issues regarding residual virulence and the potential for reverse virulence [1]. One of the first MLV, the Rockborn strain, was attenuated in cell cultures and was frequently involved in post-vaccinal distemper (PVD) in both domestic dogs and wild carnivores. As a result, the Onderstepoort strain was used instead, as it was more attenuated, being cultured on chicken embryos. In recent years, PVD has been reported in animals vaccinated with both the Rockborn-like and Onderstepoort strains.

In this study, we described a case of PVD in a litter of Labrador retrievers. Two five-week-old puppies (out of a total of 9) showed clinical signs consistent with canine distemper three days after vaccination with a live attenuated vaccine (licensed for use in 4-6-week-old puppies). These two puppies were underweight at birth and at the time of the first vaccination. Furthermore, the smallest of them was weak, unable to suckle and was artificially fed for two weeks. The puppies showed respiratory and nervous signs, including seizures, fever, and pink mucous membranes. Complete blood count and biochemistry revealed anemia, monocytopenia, and hypoglobulinemia. The treatment included oxygen, midazolam, and fluid therapy. Both puppies survived after two days of intensive care. The presence of the replicating vaccine strain in blood and fecal samples was confirmed by real-time PCR and sequencing of the partial N gene. Blood

collected from one of the puppies during hospitalization revealed the absence of specific antibodies, assessed by immunofluorescence and serum neutralization assays. The bitch, although beyond the vaccine window of immunity, had protective titers (1:160 for CPV-2 and 1:320 for CDV).

Previous studies have reported similar outcomes in puppies affected by PVD with more focus on post mortem and/or histological investigations (not carried out in our case due to the survival of the puppies) [2]. The current study describes, for the first time, the findings of PVD in five-week-old puppies, highlighting the clinical features, treatment, and the results of molecular and serological investigations. Furthermore, this case report highlights the importance of maternal immunity in the response to commonly used live attenuated vaccines, which can result in adverse effects under specific conditions.

[1] Martella V, Blixenkrone-Møller M, Elia G, Lucente MS, Cirone F, Decaro N, Nielsen L, Bánai K, Carmichael LE, Buonavoglia C. Lights and shades on an historical vaccine canine distemper virus, the Rockborn strain. *Vaccine*. 2011 Feb 1;29(6):1222-7.

[2] Pekkarinen HM, Karkamo VK, Vainio-Siukola KJ, Hautaniemi MK, Kinnunen PM, Gadd TK, Holopainen RH. Post-vaccinal distemper-like disease in two dog litters with confirmed infection of vaccine virus strain. *Comp Immunol Microbiol Infect Dis*. 2024 Feb;105:102114.