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TITLE

MACROSCOPIC AND MICROSCOPIC EVALUATION OF CENTRAL NERVOUS SYSTEM OF PIGLETS EXPERIMENTALLY INOCULATED WITH BOVINE VIRAL DIARRHEA VIRUS DURING FOETAL PERIOD

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CONTENT

Background and objectives: Pestivirus can cause hypomyelination and cerebellar hypoplasia in the central nervous system (CNS) of different animal species. BVDV, an important pestivirus, is known to infect pigs naturally. Thus, our study aimed at evaluating if BVDV-2 could cause those injuries in the CNS of piglets. Material and Methods: Three groups of pregnant gilts were inoculated by different routes at the 45th day of gestation with a field strain of BVDV-2, titration of 105,5 TCID₅₀/ml. One group (n=4) received oronasally 15 ml of the inoculum; the second (n=4) was submitted to surgical procedure for foetal inoculation by laparotomy, with inoculation of 0.25 ml in each amniotic pouch; the third constituted the control (n=2). A total of 45 neonates were physically evaluated for CNS impairment. At the third day of life, 30% of all piglets were euthanized, and the ratio between cerebellum and brain was obtained by weighing both organs individually. Fragments of brain lobes, thalamus, hypothalamus, cerebellum, medulla oblongata and spinal cord were histologically stained by Luxol Fast Blue (LFB) and Hematoxylin/Eosin (HE), for myelin and general evaluation, respectively. Results: Neurological reflexes did not evidenced characteristics of cerebellar hypoplasia. Macroscopically, 29.5% of the piglets of both infected groups showed a cerebellar:brain ratio lower than 9%, the rest presented ratios within a range considered either normal or above for the species. There was no statistical difference. Microscopically, LFB and HE did not indicate neither hypomyelination, tissue loss nor lesions characteristic of infection. Discussion and Conclusion: Results indicate variation even among unchallenged animals, which contradicts the literature. We concluded that, experimentally, BVDV-2 was not able to cause hypomyelination or cerebellar hypoplasia in the CNS of piglets, and that there is no pattern of cerebellar:brain ratio for determination of cerebellar hypoplasia ins swine. Grants #2016/21421-2 and #2016/02982-3, São Paulo Research Foundation (FAPESP).