ARTIGO 1

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Neoplastic and non-neoplastic diseases associated with feline leukaemia virus (FeLV) in cats in southern Brazil

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ABSTRACT

The objective of this study was to categorise diseases associated with FeLV infection in cats. A total of 154 cats were submitted to necropsy, histopathology exam and anti-FeLV immunohistochemistry (IHC), and 83 (50.9 %) were IHC FeLV-positive. The cats age means of 4.1 years, including 3.6 % kittens, 34.9 % junior, 37.4 % prime, 18.1 % mature, 2.4 % senior, 3.6 % unknown age. Neoplastic diseases were most prevalent with leukaemia and lymphoma being most predominant, followed by viral diseases, bacterial, trauma, degenerative, intoxications, parasitic, malformation and others. FeLV+ cats were 5.73 times more likely to be diagnosed with neoplasms than other diseases. The odds ratio (OR) of FeLV+ cats developing leukaemia (OR = 7.75) and lymphoma (OR = 6.75) was higher than other neoplasms. FeLV infection was more prevalent in the mixed breed, junior to prime, male, with neoplastic diseases, including leukaemia and lymphoma. Therefore, understanding the diseases associated with FeLV is of paramount importance in Brazil due to its high prevalence, and it may encourage the implementation of prophylactic measures to reduce its dissemination.

1. Introduction

Feline leukaemia virus (FeLV) has been associated with several neoplastic and non-neoplastic diseases. In Brazil, neoplasms are among the most prevalent diseases in FeLV-positive cats, exhibiting a strong correlation with lymphoma and leukaemia [17,18,32,38]. Less frequently diagnosed neoplasms in FeLV-positive cats include fibrosarcoma, osteosarcoma, meningioma, squamous cell carcinoma, peripheral nerve sheath tumour, and malignant fibrous histiocytoma [9,47,66]. Developed countries have presented a decreased incidence of FeLV-associated diseases as a result of prevention programmes such as immunization [34,35].

FeLV infection can affect the immune system of cats, rendering them more susceptible to severe opportunistic infections, particularly feline infectious peritonitis (FIP) and pneumonia [19,22,24,38,55,60]. Studies on FeLV-associated diseases are scarce worldwide, with findings indicating lymphoma, leukaemia, FIP, and bacterial infections as most prevalent [47,48,60]. In Brazil, only one study related to FeLV infection has been conducted; it revealed notably increased chances of neoplastic diseases such as lymphoma and leukaemia and a high incidence of infectious diseases such as FIP [38].

The state of Santa Catarina, in the south of Brazil, has one of the highest FeLV prevalence rates in Brazil and the world, with enzyme-linked immunosorbent assay (ELISA) detecting progressive infection in 22.26 % of the cat population [12], and polymerase chain reaction (PCR) detecting both progressive and regressive infection in 45.6 % [10]. A study in the same region assessed the causes of death and euthanasia in cats reported that infectious diseases were the main cause of death, with FIP being most frequent, followed by lymphoma and leukaemia [68]. Due to the high prevalence of FeLV in this Brazilian region, and only a few conducted studies on the causes of death in FeLV+ cats, the objective of this study was to assess and categorise the causes of death associated with FeLV.

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ARTIGO 2

HUGEN, GUSTAVO FELIPE G.P.; OGLIARI, DAIANE; WICPOLT, NATHALIA S.; MELCHIORETTO,ELAINE; TRAVERSO, SANDRA D.; **WISSER, CLAUDIA**; HEMCKMEIER, DEISE; GAVA, ALDO.Spontaneous poisoning of cattle by onion (Allium cepa) in Brazil. PESQUISA VETERINÁRIA BRASILEIRA(ONLINE). , v.44, p.e07204, 2024.

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Original Article
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Spontaneous poisoning of cattle by onion (*Allium cepa*) in Brazil[1]

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ABSTRACT.- Hugen G.F.G.P., Ogliari D., Wicpolt N.S., Melchioretto E., Traverso S.D., Wiser C., Hemckmeier D. & Gava A. 2024. **Spontaneous poisoning by onion (*Allium cepa*) in cattle in Brazil.** *Pesquisa Veterinária Brasileira 44:e07204, 2024.* Graduate Program in Animal Science, Centro de Ciências Agroveterinárias, Universidade do Estado de Santa Catarina, Av. Luiz de Camões 2090, Conta Dinheiro, Lages, SC 88520-000, Brazil. E-mail: aldo.gava@udesc.br

The state of Santa Catarina is the largest national producer of onions. The consumption of onion (*Allium cepa*) by domestic animals can cause hemolytic anemia and hyperhemoglobinemia of Heinz bodies in erythrocytes. The epidemiological data and the pathological clinical picture were obtained during a visit to the property where the disease occurred. A herd of 54 beef cattle from a property in the municipality of Bom Retiro/SC, was placed in an onion crop, which had not been completely harvested because it was outside the desired standard for trade. The animals remained in this field for eight days. At the end of this period, all of them presented apathy, anorexia, brown urine and mucous membranes and an onion odor on expiration. The macroscopic changes observed were pale mucous membranes, blood with decreased viscosity and increased clotting time, liver with an evident lobular pattern and remains of onion in the rumen. The carcass gave off a strong onion odor. By histological analysis, there was central lobular coagulation necrosis in bridging in the liver. In the kidneys, there were intracytoplasmic hyaline droplets in tubular epithelial cells and a deposit of eosinophilic material in the lumen of the tubules. For the diagnosis of onion poisoning, epidemiological data associated with clinical signs, such as pale mucous membranes with evidence of hemoglobin pigmentation (brown mucosa) and hemoglobinuria, should be taken into account. This article seems to be the first report of onion poisoning in cattle in Brazil.

INDEX TERMS: Hemolytic anemia, hemoglobinuria, hemoglobin nephrosis, centrilobular necrosis, poisoning, onion, *Allium cepa*, cattle, Brazil.

RESUMO.- [Intoxicação espontânea por cebola (*Allium cepa*) em bovinos.] O estado de Santa Catarina é o maior produtor nacional de cebola. O consumo de cebola (*Allium cepa*) por animais domésticos pode causar anemia hemolítica, hiperhemoglobinemia de corpúsculos de Heinz nos eritrócitos. Os dados epidemiológicos e o quadro clínico-patológico foram obtidos em visita à propriedade onde a enfermidade ocorreu. Um rebanho de 54 bovinos de corte de uma propriedade localizada no município de Bom Retiro/SC, foi colocado em uma lavoura de cebola, a qual não havia sido completamente colhida por estar fora do padrão desejado para o comércio. Os animais permaneceram por um período de oito dias nesta lavoura e, ao final deste período, todos apresentaram apatia, anorexia, urina e mucosas de coloração marrom e odor de cebola na expiração. As alterações macroscópicas observadas foram mucosas pálidas, sangue com viscosidade diminuída e aumento do tempo de coagulação, fígado com padrão lobular evidente e restos de cebola no rúmen. A carcaça exalava forte odor de cebola. Pela análise histológica havia, no fígado, necrose de coagulação centrolobular em ponte e nos rins havia gotas hialinas intracitoplasmáticas em células do epitélio tubular e depósito de material eosinofílico na luz de túbulos. Para o diagnóstico da intoxicação por cebola deve-se levar em conta principalmente os dados epidemiológicos associados aos sinais clínicos, como palidez de mucosas com evidências de pigmentação por hemoglobina (mucosa marrom)

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ARTIGO 3

CARVALHO, AMANDA Q.; **WISSER, CLÁUDIA S.**; MANFIOLETTI, GUILHERME O.; RIGO,NATALIA; CRISTANI, JOSÉ; TRAVERSO, SANDRA D.. Natural and experimental salinomycin poisoningassociated with the use of florfenicol in pigs. PESQUISA VETERINÁRIA BRASILEIRA (ONLINE). ,v.42, p.1678-5150, 2022.

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Natural and experimental salinomycin poisoning associated with the use of florfenicol in pigs[1]

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ABSTRACT.- Carvalho A.Q., Wisser C.S., Manfioletti G.O., Rigo N., Cristani J. & Traverso S.D. 2022. **Natural and experimental salinomycin poisoning associated with the use of florfenicol in pigs.** *Pesquisa Veterinária Brasileira 42:e06839, 2022.* Laboratório de Produção e Sanidade Animal, Universidade do Estado de Santa Catarina, Av. Luis de Camões 2090, Conta Dinheiro, Lages, SC 88520-000, Brazil. E-mail: amanda.queiroz@ifpr.edu.br

This study describes the spontaneous and experimental salinomycin poisoning associated with the use of florfenicol and warns about the effects of the administration of antibiotics to animals that receive ionophores in the feed as growth promoters. A batch with 1,200 finishing pigs fed a diet containing 30ppm of salinomycin received florfenicol (60ppm via feed) to control respiratory diseases. Twenty-seven pigs had difficulty walking, tip-toe walking, muscle tremors, and anorexia seven days after the start of treatment. Twenty-two animals died, 10 recovered, and two were sent to the Laboratory of Animal Pathology of CAV-UDESC to be necropsied. The experimental reproduction of the disease was carried out to clarify the possible influence of florfenicol on salinomycin poisoning using 12 pigs divided into four groups with three animals each, treated for 16 days with diets containing no additives (Group 1), 50ppm of salinomycin (Group 2), 40ppm of florfenicol (Group 3), and 50ppm of salinomycin and 40ppm of florfenicol (Group 4). Only animals in Group 4 became ill. The clinical disease was reproduced from the ingestion of 24.67mg/kg/LW of salinomycin and 19.74mg/kg/LW of florfenicol. Both natural and experimental salinomycin poisoning associated with the use of florfenicol caused a condition of myopathy characterized in histology by hyaline degeneration and floccular necrosis of skeletal fibers, with macrophage infiltrate, associated with the figures of regeneration in skeletal muscles and multifocal areas of the proliferation of fibroblasts, being more intense in the *longissimus dorsi* and semimembranosus muscles. Therefore, florfenicol can cause the accumulation of ionophore salinomycin in the animal organism, resulting in a condition of toxic myopathy.

INDEX TERMS: Experimental intoxication, florfenicol, salinomycin, natural intoxication, swine, salinomycin poisoning, myotoxicity, pig breeding, ionophore antibiotics, toxicology.

RESUMO.- [Intoxicação natural e experimental por salinomicina associada ao uso de florfenicol em suínos.] O presente trabalho descreve as intoxicações espontânea e experimental por salinomicina associada ao uso de florfenicol e alerta sobre os efeitos da administração de antibióticos aos animais que recebem ionóforos na ração como promotores de crescimento. Um lote com 1.200 suínos em fase de terminação, alimentados com ração contendo 30ppm de salinomicina, recebeu florfenicol (60ppm via ração) para o controle de doenças respiratórias. Sete dias após o início do tratamento, 27 suínos apresentaram dificuldade de locomoção, "caminhar em brasa", tremores musculares e anorexia. Vinte e dois animais morreram, 10 recuperaram-se e dois foram encaminhados ao Laboratório de Patologia Animal (CAV-UDESC) para serem necropsiados. Para esclarecer a possível influência do florfenicol na toxicidade da salinomicina foi realizada a reprodução experimental da doença utilizando 12 suínos, divididos em 4 grupos com 3 animais cada, tratados por 16 dias com rações contendo: Grupo 1 = sem aditivos, Grupo 2 = 50ppm de salinomicina, Grupo 3 = 40ppm de florfenicol e Grupo 4 = 50ppm de salinomicina e 40ppm de florfenicol. Somente os animais do Grupo 4 adoeceram. A doença clínica foi reproduzida a partir da ingestão de 24,67mg/kg/PV de salinomicina e 19,74 mg/kg/PV de florfenicol. Tanto a intoxicação natural

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ARTIGO 4

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Influence of euthanasia, the intensity of inflammatory lesion and viral load in the laboratory diagnosis of rabies in cattle[1]

Claudia S. Wisser[2*], Marcélia E.S. Fernandes[3], Elaine Melchioretto[2], Daiane Ogliari[2], Aldo Gava[2], Helena B.C.R. Batista[3], Enio Mori[3] and Sandra D. Traverso[2]

ABSTRACT.- Wisser C.S., Fernandes M.E.S., Melchioretto E., Ogliari D., Gava A., Batista H.B.C.R., Mori E. & Traverso S.D. 2021. **Influence of euthanasia, the intensity of inflammatory lesion and viral load in the laboratory diagnosis of rabies in cattle.** *Pesquisa Veterinária Brasileira 41:e06782, 2021.* Centro de Ciências Agroveterinárias, Universidade do Estado de Santa Catarina, Av. Luiz de Camões 2090, Bairro Conta Dinheiro, Lages, SC 88520-000, Brazil. E-mail: claudiawisser@hotmail.com

This research reports the use of different diagnostic tests in cattle, naturally infected by *Rabies lyssavirus* (RABV), and correlates the positivity of the tests with the clinical moment of euthanasia, the intensity of the inflammatory lesion and viral load. It also highlights the possibility of euthanasia in early stages of the disease as a way to improve animal welfare. For that, samples of 34 bovine brains were collected for analysis, preserved in 10% buffered formaline and refrigerated with subsequent freezing. The samples were subjected to direct immunofluorescence antibody technique (DFAT) tests, viral isolation in cell culture (VICC), histopathology with hematoxylin and eosin staining (HE), immunohistochemistry (IHC), Shorr stainied neural tissue smears (DSS), Reverse transcription polymerase chain reaction (RT-PCR) and polymerase chain reaction by quantitative reverse transcriptase (qRT-PCR). The areas used for analysis were the cerebellum, parietal telencephalon and thalamus. Samples with Negri bodies (NBs) or immunostaining in at least one of the analyzed areas were considered positive. For the study of the intensity of histological lesions, the lesions were classified into grades 0, 1, 2 and 3 and the positivity of the test in the presence or absence of NBs in one of the three areas analyzed. To verify the influence of the disease clinical evolution, 4-four groups of analysis were created according to the animal's clinical status at moment of the euthanasia, being: M1 = animal euthanized while standing, M2 = euthanized when in sternal recumbence, M3 = euthanized when in lateral recumbence, M4 = animal with natural death. Of the 34 brains evaluated, IHC was positive in 100% of cases, DFAT was positive in 97.05% of them, and in this negative sample the presence of RABV was confirmed by VICC. NBs ere seen in 88.23% of the cases, and the DSS test was positive in 82.35% of them. All diagnostic techniques showed positive cases in all groups analyzed. Each case was positive in at least two diagnostic methods. All cases that contained NBs were positive for rabies in the other tests. In this study, it was observed that the variables analyzed (intensity of injury and clinical evolution at the moment of euthanasia) had an influence only

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ARTIGO 5

CARVALHO, A. Q.; **WISSER, C.S.**; Laskoski, F.; MATURANA, M. C.; CRISTANI, J.; TRAVERSO,S. D.. Salinomycin intoxication in pigs associated with the use of tiamulin in the State of Santa Catarina,Brazil. SEMINA. CIÊNCIAS AGRÁRIAS (ONLINE). , v.42, p.1101 - 1110, 2021.

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Salinomycin intoxication in pigs associated with the use of tiamulin in the State of Santa Catarina, Brazil

Intoxicação por salinomicina em suínos associado ao uso de tiamulina no Estado de Santa Catarina

Amanda Queiroz de Carvalho[1]*; Claudia Salete Wisser[2]; Fernanda Laskoski[3]; Mateus Casalini Maturana[3]; José Cristani[2]; Sandra Davi Traverso[2]

Highlights

The association between salinomycin and tiamulin causes myopathy in pigs.
Ionophore omission on the feed label was decisive for intoxication.
Prophylactic measures were important to reduce economic losses.

Abstract

This paper describes a spontaneous outbreak of toxic myopathy in finishing pigs due to the ingestion of feed with salinomycin associated with tiamulin and addresses the control methods performed during the outbreak to minimize economic losses resulting from the intoxication. A lot of 940 pigs fed feed containing 30 ppm salinomycin received 100 ppm tiamulin (via water) to control recurrent respiratory diseases on the farm. After ingesting tiamulin, some animals manifested clinical signs of motor incoordination, stiff gait, reluctance to move, muscle weakness and tremors, dyspnea, depression, and decubitus, remaining in "sitting-dog position" or with the abduction of the pelvic limbs, and rested on tip-toes when in a standing position. Two animals were euthanized for macro-and microscopic evaluation. The other sick animals received supportive anti-inflammatory treatment. The most relevant macroscopic finding observed during necropsy was the slight pallor of the pelvic limb muscles. The main histopathological findings consisted of multifocal areas of hyaline degeneration and marked necrosis of skeletal myofibers, with macrophage infiltrate associated with cell regeneration and skeletal fiber phagocytosis. These lesions were more intense in the longissimus dorsi, diaphragm, and masseter muscles. The definitive diagnosis was based on epidemiological aspects and clinical lesional conditions compatible with toxic myopathy secondary to ionophore intoxication.

Key words: Ionophores. Pig farming. Toxic myopathy.

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ARTIGO 6

WISSER, C.S.; TRAVERSO, S. D.; THALER NETO, A.; Sad Fernandes, M.E.; BATISTA, H;CHIERATO, M; MORI, E.. Cattle rabies: the effect of clinical evolution, viral genetic lineage, and viral loadon the severity of histological lesions. PESQUISA VETERINÁRIA BRASILEIRA (ONLINE). , v.40, p.227- 233, 2020.

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Cattle rabies: the effect of clinical evolution, viral genetic lineage, and viral load on the severity of histological lesions[1]

Claudia S. Wisser[2*], André Thaler Neto[3], Helena B.C.R. Batista[4], Enio Mori[4], Maria E.R. Chierato[4], Marcélia E.S. Fernandes[4] and Sandra D. Traverso[2]

ABSTRACT.- Wisser C.S., Thaler Neto A., Bastista H.B.C.R., Mori E., Chierato M.E.R, Fernandes M.E.S. & Traverso S.D. 2020. **Cattle rabies: the effect of clinical evolution, viral genetic lineage, and viral load on the severity of histological lesions.** *Pesquisa Veterinária Brasileira 40(4):227-233.* Centro de Ciências Agroveterinárias, Universidade do Estado de Santa Catarina, Av. Luiz de Camões 2090, Bairro Conta Dinheiro, Lages, SC 88520-000, Brazil. E-mail: claudiawisser@hotmail.com

Our objective was the characterization and staging of histological lesions in different anatomical sites of the central nervous system (CNS) of rabid cattle. The severity of the lesions was compared with the clinical stages of the disease, the variants of viral isolates, and with the load of virus. Thirty-one spontaneously affected rabid cattle the state of Santa Catarina underwent clinical follow-up and were eventually necropsied. CNS tissues were sampled and submitted to direct fluorescent antibody technique (DFAT), immunohistochemistry (IHC), routine histopathology with hematoxylin and eosin stain (HE), reverse transcriptase polymerase chain reaction (RT-PCR), and polymerase chain reaction in quantitative reverse transcriptase in real time (qRT-PCR). Affected cattle were allotted in four groups according to their clinical stage when euthanized: G1, euthanized while standing; G2, euthanized when in sternal recumbence; G3, euthanized when in lateral recumbence; and G4, affected cattle with natural death. In order to evaluate the degree of severity of the lesions and the presence of Negri bodies (NBs), the brain was sectioned at 9 sites. Additionally, spinal cord and trigeminal ganglion sections were examined. The intensity of the lesions was graded as either absent, mild, moderate, or marked, and the presence or absence of the NBs was noted. Histological lesions were characterized by lymphocytic and monocytic meningoencephalitis with NBs in 28 cases. In all analyzed groups, intensities of histological lesions ranging from mild to severe were observed. Brain regions with the highest inflammatory lesion intensity were the medulla at the level of obex, followed by the colliculus and thalamus. NBs were observed in a higher percentage in the cerebellum, followed by medulla at the obex level, striatum complex, and frontal telencephalon. The duration of the clinical course of the disease did not influence the intensity of the inflammatory lesion, but it did influence the presence of NBs, with a higher percentage of these inclusions in cattle that died naturally than in euthanized cattle. All isolated rhabdovirus included in this study were genetically compatible with samples from hematophagous bats *Desmodus rotundus*. The evaluation by qRT-PCR did not demonstrate a correlation between lesion intensity and the amount of virus.

INDEX TERMS: Cattle rabies, clinical course, virus, genetic lineage, histology, lesion severity, RT-PCR.

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