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Canine perinatal pathology – Necropsy findings in 106 foetuses and neonates from breeding kennels in Espirito Santo State - Brazil.
A: Curso de Medicina Veterinária, Universidade Vila Velha, Vila Velha, Espírito Santo, Brazil. B: Departamento de Clínica e Cirurgia Veterinária, Universidade Federal de Minas Gerais, Minas Gerais, Brasil. C: Departamento de Patologia Geral, Universidade Federal de Minas Gerais, Minas Gerais, Brasil.
tayse@uvv.br

The etiologic diagnosis of diseases in canine foetuses and neonates requires detailed necropsy and appropriate sample collection [1]. Marked autolysis frequently present in the foetuses that die in uterus, and the rapid progress of the sick neonate to hypoglycaemia, hypothermia and dehydration, which leads to death before typical lesions can develop, represent challenges for the diagnosis [2]. Infectious diseases have been implicated as the main cause of canine perinatal mortality [1,2]. In order to investigate the diseases related to canine foetal and neonatal mortality, a prospective study was developed with enrolment of pure breed dog kennels in Espirito Santo State, Brazil, to submit to necropsy any puppy that died naturally up to 21 days of age. Macroscopy, histopathology, and routine bacteriology were performed. Between November 2014 and February 2016, a total of 114 puppies (2 mummified-2 litters; 6 aborted foetuses-3 litters; 29 stillborns-14 litters; and 74 neonates-42 litters), from 23 kennels and 14 breeds, were submitted to necropsy. Twenty of these were frozen and 94 were chilled before necropsy. In 106 individuals examined, lesions could be described, either macro or microscopically. Lesions indicative of infection, such as exudative inflammation, inflammatory cell infiltration, hyperaemia, haemorrhage, and lymphocyte necrosis were present in 104 of the 106 puppies. The lesions most frequently diagnosed were pneumonia (56/104), pericarditis (28/104), dermatitis (24/104), peritonitis (10/104), hepatitis (7/104), pleuritis (6/104), haemorrhagic splenitis (5/104), nephritis (5/104), and omphalitis (3/104). Lymphadenopathy (20/104), splenomegaly (16/104), and haemorrhage (18/104) were also often observed. Interestingly, haemorrhagic petechial renal lesions, characteristic of canine herpesvirus active infection [3] were present only in four puppies from one litter. Malformations (cleft palate, heart defects, lung hypoplasia, atresia ani, hydrocephalus and anophthalmia) were present in eight of 106 puppies (3 Miniature Poodles littermates, 2 Spitz, 2 French Bulldogs, 1 English Bulldog), from six litters. These puppies also developed infectious lesions, except one English Bulldog with interatrial septal defect and one Spitz with interventricular septal defect, which developed generalized congestion and anasarca. In 92 of the 104 (88.5%) foetuses and neonates with macroscopic and/or microscopic lesions compatible with infection, pathogenic or opportunistic bacteria were isolated. Relevance of these bacteria in canine perinatal diseases will be further investigated. Coccidia was found in feces of two neonates (13 and 14 days old), and protozoan haemolytic anaemia was diagnosed in one 15 days old neonate. PCR will be employed to the diagnosis of viruses, bacteria and protozoa in these cases.


In vitro fertilization in dogs—opportunities and challenges