ABSTRACTS

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Clinical assessment of premature canine neonates after a single course of antenatal corticosteroid

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OBJECTIVES AND METHODS: Premature birth makes the neonatal period even more critical because it delays or prevents the proper performance of vital functions such as pulmonary breathing as a replacement for placental activity. The mother’s use of prenatal corticosteroids improves lung function in premature infants (1). Therefore, we hypothesized that the antenatal administration of betamethasone has the effect of improving lung function in premature canine neonates. We used 25 neonates born by cesarean section, allocated into two groups: Control Group (CONT) – maternal administration of saline solution at 55 days of gestation (n = 15); and Betamethasone Group (BETA) - administration of a single dose of 0.5 mg / kg maternal body weight of betamethasone (Celestone® Chronodose Injection) at 55 days of gestation (n = 10). In the CONT group, neonates were evaluated at 55 (CONT55), 57 (CONT57) and 63 (CONT63) days of gestation, while in the BETA group, at 57 (BETA57) and 58 (BETA58) days of gestation. Clinical evaluation was conducted with the Apgar score (at birth, 5, 60, 120 and 240 minutes of life) using heart rate (HR), respiratory rate (RR), muscle tone (MT), reflex irritability (RI) and mucous color (MC) (graded from 0 to 2), venous gas analysis (at birth, 120 and 240 minutes of life) and pulmonary radiography (at birth). Radiographic images were described according to the degree of visualization of the pulmonary parenchyma and cardiac silhouette (graded from 1 to 3), atelectasis (mild, moderate or intense) and air bronchogram (present or absent). This study was approved by the Bioethics Committee of the Faculty of Veterinary Medicine, USP.

RESULTS: Neonates from the CONT63 group had a significantly higher Apgar score (4.4±0.7) than the others at birth. There was no statistical difference between the CONT63 (6.4±1.5) and BETA57 (8.5±0.9) groups after 60 minutes of life. Newborns of the CONT57 group did not achieve a satisfactory value of Apgar score even at 240 minutes after birth (5.4±0.5). The scores for HR, RR and IR were significantly higher in the BETA57, BETA58 and CONT63 groups compared to the others. At 240 minutes of life, the BETA57, BETA58 and CONT63 groups had the best score of MC, with no significant difference between them. The CONT63 and treated groups reached the maximum score for MC at 120 minutes of life. Normal value of blood pH was observed only at 240 minutes in the BETA58 group. Only the CONT63 showed venous normocapnia at 240 minutes of life. Normal bicarbonate levels were observed at 120 and 240 minutes of birth in the CONT63, BETA58 and BETA57 groups, with no significant difference between them. Normal values of venous Base Excess were identified at 240 minutes of life in the CONT63, BETA58 and BETA57 groups. Hypoxia was found in all groups, with less favorable results of pO2 for the CONT57 group. The BETA 57 group showed better scores for the identification of the cardiac silhouette, with no statistical difference in relation to the CONT57 group. There was no significant difference in score values for visualization of the cardiac silhouette between the BETA58 and CONT63 groups, while the worst score was observed in the CONT55 group. The radiographic images were compatible with air bronchograms in 100% of neonates from the CONT57 group, 40% from the BETA57 group and 60% of the BETA58 group. Only the BETA57 group showed a percentage of newborns (60%) free of pulmonary atelectasis, all others showed levels from mild to severe.

CONCLUSION: The antenatal administration of betamethasone promotes improvement in pulmonary gas exchange and pulmonary compensatory response to metabolic and respiratory imbalance, thus promoting clinical improvement in premature puppies born at 57 and 58 days of gestation. We believe that these findings are related with the improvement in lung function resulting from structural changes and reduction of prematurity complications.