Hormonal, biochemical and hematological changes during gestation in rabbit does synchronized with prostaglandin F$_2$ alpha

A.T. Ayisat, N. Mercy, S. Fredrick

Department of Veterinary Public Health and Reproduction, Federal University of Agriculture, Abeokuta, PMB 2240, Nigeria

Assessment of the physiological parameters such as hormonal, biochemistry and hematology of animals at different stages of gestation is helpful to monitor the health and nutritional status of animals. This study therefore evaluated the changes in hormonal levels, biochemical and hematological parameters during gestation in domestic rabbit (Oryctolagus cuniculus) does following estrus synchronization with prostaglandin F$_2$alpha (PGF$_2$$\alpha$). Eight nulliparous, sexually matured intact New Zealand rabbit does with mean weight of 1.9±0.1kg were used for the study. They were distributed into eight hutches, and were synchronized with 0.7 mg/kg BW i.m. injection of PGF$_2$$\alpha$ prior to mating. After 48 hours, the eight does were naturally mated with four bucks each (within two hours each doe was allowed to mate with four bucks to maximize chances of pregnancy). Does were examined for pregnancy using ultrasonography seven days after mating. Blood was sampled once every week from the jugular vein before mating (BM), 7 days after mating (7DPM), 14 days after mating (14DPM), 21 days after mating (21DPM), 28 days after mating (28DPM) and 3 days after parturition (3DPP), respectively. Blood plasma progesterone, FSH, estrogen and prolactin were assayed using enzyme linked immunosorbent assay. Hematological and biochemical parameters determined were packed cell volume (PCV), hemoglobin (Hb) concentration, red blood cell (RBC) count, white blood cell (WBC) count, cholesterol, triglycerides, high density lipoproteins (HDL) and low density lipoproteins (LDL). Data obtained for hormone and serum biochemistry were subjected to descriptive statistics, while other data were subjected to analysis of variance using general linear model procedure of statistical software. Results revealed that mean values for progesterone, FSH, estrogen and prolactin during gestation significantly varied at different periods of the experiment (p<0.05). Progesterone secretion during gestation peaked at 14DPM (32.1 ± 0.27 ng/ml). Estrogen secretion was at BM (857.2 ± 3.22 ng/ml), at 14DPM (857.5 ± 3.80 ng/ml) and increased to 866.6 ± 2.17 ng/ml at 28DPM but subsequently declined to 850.7 ± 6.04 ng/ml at 3DPP. Prolactin increased from 92.3 ± 0.13 ng/ml at BM to 92.8 ± 0.06 ng/ml at 7DPM, but decreased to 91.8 ± 0.36 ng/ml at 14DPM then increased to 92.5 ± 0.20 ng/ml at 3DPP. Cholesterol, triglyceride and LDL were not significantly (p>0.05) influenced by the period of sampling. The PCV, RBC, Hb, and WBC significantly varied from BM to 3DPP (p<0.05). The RBC, PVC, Hb and WBC counts decreased gradually from BM to 28DPM and subsequently increased until 3DPP. The study concluded that there were changes in hormonal parameters, PCV, RBC, Hb, WBC, and LDL while cholesterol, triglyceride, HDL and the WBC differential counts showed no changes during the study period.

Keywords: Gestation, New Zealand white rabbit, progesterone, parturition