

Dynamics of Follicle Vascular Perfusion, Dimensions, Antrum Growth, Circulating Angiogenic Mediators from Deviation to Ovulation

Authors : Elshymaa A. Abdelnaby, Amal M. Abo El-Maaty

Abstract : This study aimed to investigate dynamics of dominant and subordinate follicles change in dimensions, vascularity and angiogenic hormones after completing deviation till ovulation. Five cyclic mares were subjected to daily blood sampling and rectal Doppler ultrasonographic examination along two estrous cycles. Using electronic calipers, three diameters were recorded for each follicle to estimate area and volume. Leptin, Insulin-like growth factor-I (IGF-1), nitric oxide (NO) and estradiol (E2) were measured. Area of color- and power- Doppler modes with area and circumference of the first (preovulatory) and subordinate follicles were measured in pixels. Follicles were classified into F1O (preovulatory), F2O (subordinate), F3O (third ovulatory) on the dominant ovary and F1C (first contra) and F2C (second contra) on the contralateral ovary. Days before ovulation significantly ($P < 0.0001$) affected diameter, circumference, area, volume, area/pixel and antrum area of the preovulatory follicle. With the increase of diameter, area, volume area/pixel, antrum area/pixel and circumference of F1O, those of all subordinates were decreasing. The blue blood flow area, power and power minus red blood flow area of F1O increased from day -6 till day of ovulation (day 0), but red blood flow area significantly decreased. F1O had the lowest percent of colored pixels and percent of the colored pixels without antrum. Estradiol and leptin increased from day -6 till day 0 but IGF-1 decreased till day -1 but NO achieved a peak on day -3 then decreased till day 0. In conclusion, antrum growth, blood flow and angiogenic hormones play a role in maturation and ovulation of the dominant follicle in mares.

Keywords : angiogenic hormones, blood flow, mare, preovulatory follicle

Conference Title : ICASVM 2016 : International Conference on Animal Science and Veterinary Medicine

Conference Location : London, United Kingdom

Conference Dates : August 25-26, 2016