

Assessment of luteal function by ultrasonographic appearance and measurement of corpora lutea in goats

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Abstract

In order to characterize the evolution pattern of the corpora lutea (CL) and to compare luteal function with their ultrasonographic appearance, 37 estrous cycles of Serrana goats ($n = 22$) were studied during breeding season. A daily transrectal ultrasound scanning was performed through two successive estrous cycles. Both solid and fluid-filled CL were observed and measured in both ovaries of each goat. Additionally, each CL was classified as CL_{ICHE} (CL with irregular contours and heterogeneous echotexture) or CL_{RCOE} (CL with regular contours and granular echotexture). Ovarian cyclic activity and luteal function were evaluated by biweekly plasma progesterone (P4) determination. The CL ($n = 60$) were first visualized on day 2.9 ± 1.0 after the day of ovulation (day 0), showing 7.1 ± 1.8 mm of diameter and reach their maximum size (12.5 ± 1.6 mm) on day 10.7 ± 3.2 ($P < 0.001$). Two days before the following ovulation (day -2), the CL regressed to 8.4 ± 1.3 mm ($P < 0.001$). The central cavity was found in 78.3% of CL, and had a persistence of over 50% until the last days of estrous cycle. The ratio CL length/cavity length was low during the first-third and high during the remaining two-thirds of estrous cycle. On day 2, the percentage of CL_{ICHE} was 33.3%, and began to decrease to 16.7% on day 6, reaching the minimum of 3.3% on day 10 ($P < 0.001$). This proportion increased on day -3 to 48.3% and reached 90% on day -1 ($P < 0.001$). The correlation between CL size and plasma P4 levels was $r = 0.63$ ($n = 87$; $P < 0.001$). A negative correlation between the daily proportion of CL_{ICHE} and plasma P4 levels was found ($r = -0.95$; $n = 18$; $P < 0.001$). These results suggest that the ultrasonographic appearance of CL is a reliable parameter for the assessment of luteal function in goats. Both the characterization of echotexture and size of central cavity could be valuable tools to differentiate between phases of normal estrous cycles. © 2006 Elsevier B.V. All rights reserved.

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