Accuracy of behavioral testing for pregnancy diagnosis in the dromedary camel
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Pregnant camels display a distinct posture characterized by immobilization, head elevation and tail curling when approached by a rutting male. For centuries, Bedouins have relied on this behavior for breeding management of their camel herds and identification of non-pregnant or infertile females. The objectives of the present study were to determine the sensitivity and specificity of this behavioral testing for pregnancy diagnosis and to evaluate the timing of onset of this behavior following fertile mating.

Experiment 1: A total of 157 females that were mated 25 days previously were teased to a male. Two observers recorded the teasing results for each female as either pregnant or non-pregnant based on behavior. All teased females were submitted within one day of behavioral testing to transrectal examination by ultrasonography for pregnancy diagnosis. Additionally, blood samples were taken from all females at the time of behavioral testing and serum was stored at -20°C until assayed for progesterone by radioimmunoassay.

Experiment 2: Fifty healthy multiparous females were examined daily by ultrasonography and mated to fertile males when a mature follicle (12 to 18 mm diameter), uterine tone, and uterine edema were present. Transrectal ultrasonography was performed on all mated females 7 days later for determination of ovulation and 16 days post-mating for pregnancy diagnosis. All females were teased daily by a rutting male and behavior was recorded as pregnant or not pregnant.

In experiment 1, pregnancy diagnosis by ultrasonography revealed 56.1% pregnant (n=88) and 43.9% non-pregnant (n=69) females. Sensitivity and specificity of behavioral testing compared to pregnancy diagnosis by ultrasonography were 100% and 91.3%, respectively. Six females diagnosed pregnant by behavioral testing were not pregnant on ultrasonographic examination but had either corpora lutea (n=4) or luteinized anovulatory hemorrhagic follicles (n=2). All females diagnosed pregnant by behavioral testing had a serum progesterone level >2 ng/mL.

In experiment 2, 43 of the 50 females (86%) ovulated and showed a mature corpus luteum 7 days post-mating. Of the 43 ovulating females, 39 (90.7%) were determined to be pregnant by ultrasonography on day 15 post-mating. The percentage of females that showed behavioral signs of pregnancy increased steadily to reach 100% by day 15 post-mating (day 7=2.6%; day 8=10.3%; day 9=17.9%, day 10=17.9%, day 11=17.9%; day 12=76.9%; day 13=82%; day 14=82%; day 15=100%; day 16=100%).

In conclusion, behavioral testing for pregnancy diagnosis as practiced by Bedouins is highly accurate in normal females starting from day 15 post-mating. A small percentage of false positives may occur due to persistence of luteal activity. The typical pregnancy behavior of the female camel is caused by persistently elevated progesterone levels.

Keywords: Pregnancy, behavior, camel, ovulation, progesterone