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Bacteriological and cytological findings of the genital tract of beagle bitches during the puerperium

Orfanou D.C., Fthenakis G.C.

aVeterinary Faculty, University of Thessaly, 43100 Karditsa, Greece
gcf@vet.uth.gr

Objective of this work was to describe the normal bacteriological and cytological features of the post-partum involuting genital tract of bitches. Beagle dogs (n=12) were monitored for up to three months after a normal whelping (i.e., with no veterinary assistance). Detailed clinical examination and samplings (with sterile swab into the anterior part of the vagina) were performed on the day of whelping and 1, 2, 4, 7, 10, 14, 21 days after whelping and at weekly intervals thereafter. Aerobic bacteriological culturing was carried out using conventional techniques. In Giemsa-stained smears, numbers (counting scores from 0 [no cells] to 4 [slide full of cells]) and types of cells were evaluated. Ovariohysterectomy was performed on one of the experimental animals on the 4th, 7th, 10th, 14th, 21st, 28th, 35th, 42nd, 56th, 70th day after whelping and to two animals on 84th day after whelping for sample collection from the inside of the uterus. Four stages were distinguished: L1 (Day of whelping to 7th day after it), L2 (8th to 21st day after whelping), L3 (22nd to 42nd day after whelping) and L4 (subsequently to 42nd day after whelping). All animals whelped normally and remained clinically healthy throughout the experimental period. Bacteria were isolated from the anterior vaginal samples of every bitch at some point during the study, in total from 51/122 samples. Bacterial isolation was more frequent and of shorter duration early post-partum: frequency of bacterial isolation from vaginal samples was 0.525 in L1, 0.333 in L2, 0.333 in L3 and 0.278 in L4 (P=0.094 between all stages, P<0.1 for L1 versus each of the other stages). No association was evident between presence of vaginal discharge and isolation of bacteria (P>0.1). Median time to first infection after whelping was 0.25 days. Median duration of infection was 4 days in L1 and 6.5 days in all other stages (P<0.05 for L1 versus each of the other stages). Bacteria were recovered in pure (n=47) or mixed (n=4) isolations and were identified as Escherichia coli (n=22), Trueperella pyogenes (n=16), Streptococcus spp. (n=8), Pasteurella multocida (n=6) or Staphylococcus spp. (n=3). After ovariohysterectomy, bacteria were isolated from the inside of the uterus only on two occasions: on the 4th (E. coli) and the 7th (T. pyogenes) days of the puerperium. There was a progressive increase in epithelial cell counting scores and progressive decrease in leucocyte counting scores; median counting scores were as follows: 1 in L1, 2 in subsequent stages for epithelial cells and 2 in L1, 1 in subsequent stages for leucocytes (P=0.016 and P=0.037, respectively, between periods). Leucocyte counting scores were significantly greater in samples that yielded bacteria than in samples that did not (P=0.025). Mostly (>55%) uterine (epithelial cells normal or degenerated, characteristically clustered) or vaginal (primarily parabasal or small intermediate cells) cells were observed. Among leucocytes, neutrophils predominated (>85%). Trophoblast-like cells were observed in L1 and L2 and erythrocytes were seen occasionally. After ovariohysterectomy, cells from the inside of uterus were mostly (>70%) leucocytes (>85% neutrophils) in the initial stages, with progressive decrease in numbers (P=0.04). Normal and degenerated uterine epithelial cells, characteristically clustered, progressively increased (P=0.737) and predominated subsequently to the 56th day after whelping. Erythrocytes and trophoblast-like cells were also evident, with numbers progressively decreasing. In conclusion: bacterial presence in the anterior vagina is more frequent immediately after whelping, but still evident later; it is of shorter duration at early involution, perhaps due to the improved defenses (e.g., increased number of leucocytes) of the genital tract.