

Clinicopathological evaluation of vaginal leiomyoma and ovarian luteoma in a bitch

Case Report

ABSTRACT

A 7-years-old female Golden Retriever dog was presented to the clinic with a multilobular mass protruding from the vulva. On clinical examination, the mass was observed on the circumference of the vaginal canal. On vaginal cytology, parabasal cells, intermediate cells, neutrophil infiltration and clumps of bacteria were determined. Mild anemia, severe leukocytosis and high mean platelet volume (MPV) value were detected. As a treatment, vaginal mass was totally extirpated by partial vaginectomy and subsequently ovariohysterectomy were performed to avoid the re-occurrence of the vaginal tumor. Both the extirpated vaginal mass and the genital organs removed by ovariohysterectomy were examined histopathologically. The tissue samples were fixed in 10% neutral buffered formalin. After routinely processed they were embedded in paraffin. Sections cut at 4 µm in thickness were stained with hematoxylin and eosin (H&E) stain to be evaluated by light microscopy. Vaginal mass was capsulated and non-invasive. Densely packed spindle cells with eosinophilic cytoplasm and elongated nuclei were determined on the vaginal tumor. Polyhedral tumoral cells with abundant, finely vacuolated cytoplasm that contain lipid droplets separated by thin fibrovascular stroma were detected on the ovarian mass. The nuclei were centrally located, small and oval. Mild to moderate anisocytosis and anisokaryosis were noted. Benign tumors were diagnosed which were vaginal leiomyoma and bilateral ovarian luteoma. Nutritional disorders, use of exogenous steroid hormones, hormone irregularities, genetic predisposition, exposure to neoplastic agents are effective to development of gynecological tumors. It was concluded that histopathological analysis of every surgically removed tissue should be performed in order not to miss a tumorous condition even if it does not show any symptoms.

Keywords: Bitch, ovarian luteoma, vaginal leiomyoma.

INTRODUCTION

Neoplasms in genital tract are more common in bitches. Leiomyoma is benign tumor which originates from any organ containing the smooth muscle cells. Vaginal leiomyoma can be oval or round shape, usually as well defined, capsulated, a single or multiple structures (Singh et al., 2014). Diagnosis of leiomyoma has to be made by histopathology. The most common treatment choice is surgical intervention with extirpation of the mass throughout episiotomy (Nelissen et al., 2012). To avoid the recurrence of the vaginal tumors, ovariohysterectomy must be performed (MacLachlan and Kennedy, 2002).

Ovarian tumors in domestic animals are relatively uncommon (Moulton, 1990). Luteoma is the rarest ovarian neoplasm which originates from sex-cord stromal tumors (McEntee, 2002). Luteoma is a term used for tumors of yellow brown color, solitary structure, which can reach quite large sizes, consisting of luteinized cells resembling the corpus luteum (Moris and Dobson, 2001).

How to cite this article

Kula, H., Günay Uçmak, Z., Kırşan, İ., Yüzbaşıoğlu Öztürk, G., Gülçubuk A. (2022). Clinicopathological evaluation of vaginal leiomyoma and ovarian luteoma in a bitch. *Journal of Advances in VetBio Science and Techniques*, 7(2), 269-273. <https://doi.org/10.31797/vetbio.1068008>

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Article info

Submission: 03-02-2022

Accepted: 18-04-2022

Online First: 25-08-2022

Publication: 31-08-2022

e-ISSN: 2548-1150

doi prefix: 10.31797/vetbio

• <http://dergipark.org.tr/vetbio>

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Ovarian luteoma usually appear unilaterally and regresses after birth (Ichimura et al., 2010; Yamini et al., 1997; Yılmaz et al., 2017). Based on clinicopathological, histopathological and immunohistochemical characteristics, ovarian luteoma is diagnosed (Namazi et al., 2015).

CASE REPORT

A 7-years-old female Golden Retriever dog was presented to the clinic with a multilobular mass protruding from the vulva. There was no evidence of urinary incontinence. On clinical examination, the mass was observed on the circumference of the vaginal canal. On vaginal

In this case report, clinicopathological evaluation of a dog with vaginal leiomyoma and ovarian luteoma, surgical interventions for diagnosed gynecological tumors and preventive approaches are presented.

cytology, parabasal cells, intermediate cells, neutrophil infiltration and clumps of bacteria were determined. The pro-estrous bleeding went undetected for over a year. Total blood count and some biochemical parameters were evaluated. Mild anemia, severe leukocytosis and high mean platelet volume (MPV) value were detected (Table 1).

Table 1. Results of total blood count and some biochemical parameters.

Parameters	Results (Referance ranges)	Parameters	Results (Referance ranges)
RBC (M/μL)	6.23 (5.65 - 8.87)	PLT (K/μL)	156 (148 – 484)
HCT (%)	34.8 (37.3 - 61.7)	MPV (fL)	16.9 (8.7 - 13.2)
HGB (g/dL)	12.7 (13.1 - 20.5)	PCT (%)	0.26 (0.14 - 0.46)
MCV ((pg)	55.9 (61.6 - 73.5)	GLU (mg/dL)	110 (70-143)
MCH (pg)	20.4 (21.2 - 25.9)	CREA (mg/dL)	1.2 (0.5-1.8)
RDW (%)	28.1 (13.6 - 21.7)	BUN (mg/dL)	14 (7-27)
RETIC (K/μL)	77.3 (10 - 110)	TP (g/dL)	7.5 (5.2-8.2)
WBC (K/μL)	51.75 (5.05 - 16.76)	ALB (g/dL)	3.1 (2.2-3.9)
NEU (K/μL)	40.66 (2.95 - 11.64)	GLOB (g/dL)	3.5 (2.5-4.5)
LYMP (K/μL)	8.26 (1.05 - 5.10)	ALT (U/L)	45 (10-125)
MONO (K/μL)	2.75 (0.16 - 1.12)	AST (U/L)	22 (5-55)

(RBC:Red blood cell, HCT:Hematocrit, HGB:Hemoglobin, MCV:Mean corpuscular volume, MCH:Mean corpuscular hemoglobin, RDW: Red cell distribution width, RETIC:Reticulocyte, WBC:White blood cell, NEU:Neutrophil, LYMP:Lymphocyte, MONO:Monocyte, PLT:Platelet, MPV:Mean platelet volume, PCT:Plateletcrit, GLU:Glucose, CREA:Creatinine, BUN: Blood urea nitrogen, TP:Total protein, ALB:Albumin, GLOB: Globulin, ALT: Alanine aminotransferase, AST: Aspartate aminotransferase).

As a treatment, vaginal mass was totally extirpated by partial vaginectomy and subsequently ovariohysterectomy were performed to avoid the re-occurrence of the vaginal tumor. Also, quarterly routine check-up was recommended for the follow-up of possible distant metastases. Anesthesia was maintained as described by Çoban et al. (2021). An absorbable suture material was used for all sutures (Monocryl, No: 2/0, Medeks, Turkey).

Both the extirpated vaginal mass and the genital organs removed by ovariohysterectomy

were examined histopathologically. The tissue samples were fixed in 10% neutral buffered formalin. After routinely processed they were embedded in parafin. Sections cut at 4 μ m in thickness were stained with hematoxylin and eosin (H&E) stain to be evaluated by light microscopy. Grossly both ovaries were multilobulated and distended (Figure 1A). The tumor sizes were measured in the vagina 2 cm, 1 cm and 0.5 cm (Figure 1B).

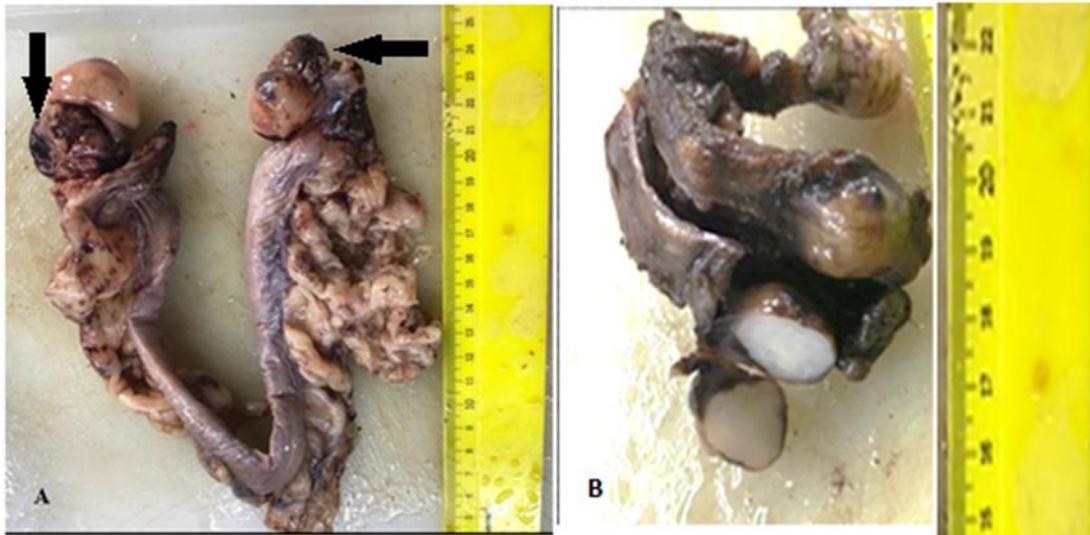


Figure 1. A. Macroscopic image of ovariohysterectomy material. Tumoral tissue in both ovaries (black arrows). B. Macroscopic image of multilobular vaginal mass. The masses were firm, solid and white in section.

Histological examination of both ovaries and the vaginal mass were revealed luteoma and leiomyoma, respectively. The luteoma was separated from surrounded tissue with thin fibrous capsula (Fig 2A). It composed of polyhedral tumoral cells with abundant, finely vacuolated cytoplasm that contain lipid droplets separated by thin fibrovascular stroma (Fig 2B).

The nuclei were centrally located, small and oval. Mild to moderate anisocytosis and anisokaryosis were noted. Normal ovarian tissue with follicles in different stages of development was also observed. Vaginal mass was capsulated and non-invasive (Fig 2C). Densely packed spindle cells with eosinophilic cytoplasm and elongated nuclei (Fig 2D).

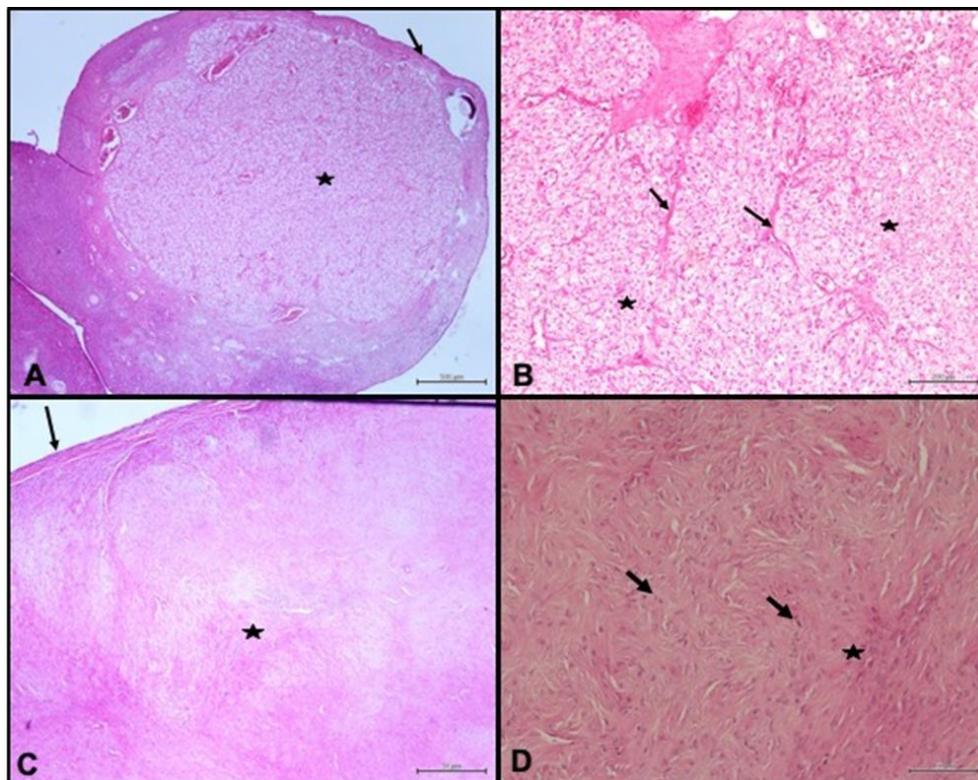


Figure 2. H&E. A. Tumoral mass (star) enclosed by fibrous capsula (arrow), Bar=500 μ m. B. Polyhedral cells with vacuolated cytoplasm and round nuclei (star), separated by thin fibrovascular stroma (arrow), Bar=200 μ m. C. Microphotograph showing leiomyoma (star) with the overlying fibrous capsula (arrow), Bar=500 μ m. D. Well differentiated smooth muscle cells (arrow) arranged in streams or interlacing bundles (star), Bar=100 μ m

DISCUSSION

Benign neoplasms were determined in a 7 years old female Golden Retriever in this case. Vaginal leiomyoma and ovarian luteoma in bitches was reported in older ages (Ichimura et al., 2010; Salomon et al., 2004; Singh et al., 2014; Yılmaz et al., 2017). In contrast with the previous reports, the bitch in this case was in middle age. Yamini et al. (1997) diagnosed an ovarian luteoma associated with hyperadrenocorticism in a 6.5 years old Rottweiler bitch. However, there wasn't an additional systemic disease in this case, the age of the affected bitch was similar with Yamini et al. (1997) reported. Although mild anemia, severe leukocytosis and high MPV were determined, some biochemical parameters were within reference ranges in this case. Guner et al. (2020) reported blood parameters were within the reference range except the hemoglobin concentration in a bitch with vaginal lipoma. While the vaginal neoplasm in this case was benign, as reported by Guner et al. (2020), the total blood count results in the current case were not within the reference range contradictly with the researchers (Guner et al., 2020). Erythrocytosis, anemia, neutrophilic leukocytosis, and thrombocytosis are defined as the paraneoplastic syndrome that occurs in neoplastic diseases (Aydın et al., 2011). Because multi-neoplastic cases were diagnosed, mild anemia, severe leukocytosis and high MPV were observed in this case similar with the previous report as a paraneoplastic syndrome.

As a treatment of the vaginal neoplasm in this case partial vaginectomy was performed and ovariohysterectomy applied to avoid the recurrence of the disease. The researchers reported that ovariohysterectomy and antiprogesterin treatment provided regression of vaginal leiomyoma (Ferré-Dolcet et al., 2020; Sathya et al., 2014). Besides, ovariohysterectomy is recommended to avoid

the recurrence of the vaginal tumors (MacLachlan and Kennedy, 2002). In contrast with the researchers (Ferré-Dolcet et al., 2020; Sathya et al., 2014), partial vaginectomy was performed as a treatment of the vaginal leiomyoma but in line with MacLachlan and Kennedy (2002), ovariohysterectomy was performed to avoid the recurrence of this neoplasm.

The pro-estrous bleeding went undetected for over a year in the present case. Also, the affected ovaries were multilobulated and distended. Distant metastases caused by the gynecological neoplasms were not observed in the present case. Ovarian luteoma usually appear unilaterally (Ichimura et al., 2010; Yamini et al., 1997; Yılmaz et al., 2017). In contrast with the previous reports, both ovaries were affected with luteoma in this case. Although canine ovarian tumors with epithelial origin are usually bilateral, to the best of our knowledge, no literature data has been found about the formation of bilateral ovarian luteoma in dogs. Luteoma is a term used for tumors composed of luteinized cells resembling the corpus luteum. Histologically, they originate from granulosa cells and consist of luteal cells. The tumor, which is observed quite rarely, grows limitedly and does not metastasize (Moris and Dobson, 2001). Similarly, ovarian luteoma was not in huge sizes and non-metastatic in this case. Moderate virilization (masculine behavior) may be seen in the animal, depending on the tumor (MacLachlan et al., 2002; McEntee, 2002). Prolonged anestrous and undetected proestrus bleeding in this case is thought to be due to the moderate virilization as the previously reported.

In this case, it is emphasized that ovarian luteoma, which is a rare tumor in dogs, can progress together with vaginal leiomyoma. It was concluded that histopathological analysis of every surgically removed tissue should be performed in order not to miss a tumorous

condition even if it does not show any clinical symptoms. In cases with multiple gynecological pathologies, it should be recommended to investigate tumor biomarkers or blood hormone levels in order to decide on alternative treatment methods in addition to surgical treatment.

ACKNOWLEDGMENT

Ethical approval: Permission was obtained from the patient owner on 29.11.2021 with a "treatment and information consent form"

Conflict of interest: The authors declared that there is no conflict of interest.

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