Vulvar and vaginal tumors in Hawshar dogs

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Abstract

Twelve Hawshar bitches were (3-5 years in aged) examined clinically and vulvovaginal tumor masses were diagnosed histopathologically revealed the three types of tumor which include; (three cases of vulvovaginal diffuse small cell lymphoma, six cases of vaginal transmissible venereal tumor, and three cases of leiomyoma), these masses were removed surgically with local excision with or without episiotomy and recurrence of the tumor showed in some cases after following up for different duration. In conclusion, this study revealed that the age with physical condition of the dog were played an important role in cancer occurrence, and the surgical excision was not regarded as the ideal treatment especially in malignant tumor.

Keywords: Hawshar dog; vagina; vulva; diffuse small cell lymphoma; TVT; leiomyoma
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سرطانات الفرج والمهبل في كلاب الهاوشار

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الخلاصة

اثنى عشر من أنثى الكلاب من فصيلة الهاوشار تم فحصها سريريا وليتم تشخيص اصابتها نسجيا وأمراضيا بثلاث أنواع من سرطانات الفرج والمهبل وهي: ثلاث حالات من نوع خلايا اللمفومة الصغيرة النافذة، وستة منها سرطان المهبل التناسلي الساري، وثلاث اخرى من نوع ليومايومة. تم أزالة الكتل السرطانية موضعيا بالطرق الجراحية التقليدية مع او بدون أجراء عملية توسيع الفرج. وتم مشاهدة اعادة تولد الكتل السرطانية في بعض من الحالات بعد متابعة لها ولمدد متفاوتة. وتم الأستنتاج بان الأزالة الجراحية للأنسجة السرطانية هو الهدف لعلاج لأنواع الحميدة والخبيثة للأنوع المختلفة من سرطانات الفرج والمهبل ومن دون اي تداخل علاجي. وكانت الأنواع الشائعة لتلك السرطانات في كلاب الهاوشار هي اللمفامية والتي شملت على خلايا اللمفومة الصغيرة النافذة و سرطان المهبل التناسلي الساري. وكانت للعمر والحالة الفيزيائية للكلاب دورا مهما في حدوث الأصابة بالسرطانات.

Introduction

Tumors of the bitch canine reproductive tract were classified into two categories: those tumors that deriving from the ovaries and those that were originated from the tubular genitalia (1). From all the canine tumors 3% of it derived from the female tubular genitalia. Vaginal and vulvar tumors are the second most common canine bitch tumor after the mammary gland tumors, they constitute 2.4 - 3% of canine neoplasia (2,3).

The most common benign mesenchymal tumors in bitch are leiomyoma, fibroma or fibroleiomyoma, which were developed in the uterus, cervix or vagina (2,3). The dogs are at risk of developing benign mesenchymal tumors that have (mean age 10–11 years), in contrast, that the lipoma developed in a slightly younger bitch (4).

The extreme common malignant tumor of the vagina and vulva is Leiomyosarcoma, sarcomas, carcinomas, and the transmissible venereal tumor has been reported. Any cutaneous tumors, particularly squamous cell carcinoma, and mast cell tumor may also occur on the vulva labia (5).

Lymphoma or lymphosarcoma is occurred in dog mostly. They usually originate in lymphoid tissues, like the lymph nodes, spleen, and bone marrow. However, they can arise in any tissues in the body. Lymphoma accounts for approximately 7-24% of all canine neoplasia (6). Lymphoma is more predominant in breeds that are; Boxers, Bull Mastiffs, Basset Hounds, Saint Bernards, Scottish Terriers, Airedales, and Bulldogs. Dogs with a lower risk include Dachshunds and Pomerians (7).

The most widespread type of tumor of the reproductive system of a bitch is neoplasias of the vagina (8). The main neoplasias of the vagina are; transmissible venereal tumor (TVT), squamous cell carcinoma (SCC), leiomyoma, and fibro papilloma. These Vaginal tumors are frequently present in a bitch of old age, except the TVT that is usually present in young dogs. Vaginal neoplasia is clinically described by protrusion of mass, dysuria and continuous discharge from vagina (9). TVT, also well-known as infectious sarcoma, venereal granuloma, transmissible lymphosarcoma or Sticker tumor, is a benign reticuloendothelial tumor of the dog that mainly affects the external genitalia and occasionally the internal genitalia as it is transmitted during coitus, contact of mucous membranes and licking the wounds of an infected dog. The metastasis is rare in this TVT but may involve lymph nodes (10). The TVT is characterized by excessive bleeding from the genital organs along the cauliflower-like growth on penis or vagina . TVT develops in the vagina and on the vulva (11). TVT is noticed in the extragenital regions in dogs at the skin of the perineum, face, side of the thorax, mouth, nasal cavity, limbs and conjunctiva (12). Leiomyomas are common in the canine female reproductive tract and account for 2.4% of all canine neoplasms (13). About 85% of leiomyoma occurring in the reproductive tract of the bitch arise from the vagina, vestibule, and vulva. The incidence of leiomyoma is highest between 5-16 years of age (14).

Our aim of the present study was to an overview on the clinical and histopathological cases of the vulvar and vaginal tumors in Hawshar dogs subjected to surgical treatment.

Materials and methods

The study was performed on 12 female Hawshar breed dogs, (3-5 years in aged), which brought to our clinic during the period from 2015 to 2016. After clinical examination of the external genitalia, it found that, there was a masses on the vulva, vagina or vulvovaginal area.

Under aseptic technique, and general anesthesia, using atropin sulphate (VAPCO -Jordan; 1 mg/ml) was given in dose rate of 0,01 mg/kg b.w. subcutaneous as a premedication, 10 min. latera mixture of xylazine HCl 2% (alfa san-WOERDENHOLLAND), and ketamine HCl 10% (alfa san-WOERDENHOLLAND) in the dose rate of 5 mg/kg, and 15 mg/kg intramuscular. All cases were subjected to surgical excision of the mass, while in deep-seated cases (1 leiomyomas and 2 vaginal TVT) an episiotomy was performed at one o'clock position relative to the dorsal commissure of the vulva to performed wide exposured. Bladder catheterization using a foley catheter (8 French) was performed in all bitches. The mass was easily visualized and it was noted that the vagina was extremely dilated. The growth was resected out. The episiotomy incision was closed by using 2/0 Vicril with simple interrupted suture pattern. The skin incision was closed routinely. Biopsy from these masses were fixed in 10 % buffered formalin solusion. Paraffin sections with 5-mm thickness were prepared routinely and stained with hematoxylin and eosin (H&E). The age of animals was recorded, and the detailed localization of masses was also noted. According to generally accepted a final histopathologic diagnosis was made.

Results

In the present study, the 12 Hawshar bitches exhibited various types of vulvovaginal neoplasms. The diagnosed neoplasms were vulvovaginal diffuse small cell lymphoma (n=3), vaginal TVT, which was (n=6), and leiomyoma (n=3). Local excision with or without episiotomy was prosperous in all cases and recurrence of the tumor showed in some cases as in table 1. Surgical excision was performed in the recurrent cases positively and recovered without regrowth of the mass.

In 3 Hawshar bitches, the vulvovaginal diffuse small cell lymphoma type of vulvovaginal neoplasms, the diffused small cell lymphoma masses protruding from the vulvovaginal ostium referred for evaluation, were showed severely enlarged masses. The mass on the cut surface organs, had diffusely whitish gray appearance and was rubbery in texture. Histopathology it revealed diffuse sheets and cords of small neoplastic lymphocytes in the subepithelial stroma, nuclear pleomorphism was moderately observed in the neoplastic cells. The nuclei were generally vesicular and the chromatin was commonly diffuse to quite finely granular with irregular as in figure 1. Only in the first case, the neoplasia was not regrowth while the other two ones showed regrowth and the recovery without recurrence were obtained successfully after the second surgery.

Table 1: Viewing patient records including animal sexes, ages, breed, tumor types, location, treatment, recurrence and follow-up of vulvar, vaginal neoplasms in Hawshar bitches, Loc= local excision, Epi= episiotomy and TVT= transmissible venereal tumor

Cases No	Age (yr)	Tumor type	Location	Treatment	Recurrence	Follow-up	2nd treatment	Follow-up
1	4	Diffuse small cell lymphoma	Vulva	Local excision	No	-	-	-
2	5	Diffuse small cell lymphoma	Vulva	Local excision	Yes	6 mo	Local excision	7 mo
3	4	Diffuse small cell lymphoma	Vulvo-vagina	Local excision	Yes	27 mo	Local excision+Epi	8 mo
4	3.4	TVT	Vagina	Local excision	No	12 mo	Local excision	10 mo
5	3	TVT	Vagina	Local excision+Epi	No	6 mo	Local excision	6 mo
6	3	TVT	Vagina	Local excision	No	3 mo	-	-
7	3.5	TVT	Vagina	Local excision+Epi	No	6 mo	-	-
8	2.5	TVT	Vagina	Local excision	No	3 mo	-	-
9	3.5	TVT	Vagina	Local excision	No	5 mo	-	-
10	3	leiomyoma	Vagina	Local excision	No	7 mo	-	-
11	4	leiomyoma	Vagina	Local excision+Epi	Yes	4 mo	Local excision+Epi	5 mo
12	4	leiomyoma	Vagina	Local excision	No	3 mo	-	-

Cases of Vaginal transmissible venereal tumor

The 6 Hawshar bitches brought up to our clinic with a history of mass popping out from the vulva. Physical examination revealed a cauliflower growth with a stock like structure originating from the vaginal mucous membrane and the tumor was found to be encapsulated, firm with the solid and white appearance on the cut surface. For histopathological evaluation revealed the component cells grow in compact masses or confluent sheets. Sometimes, however, they grow in rows, cords, or loose in a delicate stroma. Anisokaryosis was mild to moderate as in figure 2. No recurrence was showed in any case of them.

Three Hawshar bitches were presented and examined in our clinic, showed densely packed solitary mass removed from the vagina through the vulvar opening by surgery. Histopathology, neoplastic cells were revealed interlocking fascicles of different incidence that composed of spindle-shaped with elongated nuclei as in figure 3. The regrowth has happened only in the one case of this type of tumor and the surgical treatment was a good choice with complete recovery of the bitch.

Discussion

The dog species are the most common patients of veterinary clinics and it's the maximum tissue samples sent to histopathologic examination (15). Tumors of the urogenital systems are most common in this species of animals than in cats (16).

In the previous study relevant tumors of the bitch genital system, vaginal tumor dominated, while, neoplasms of the uterus were rarely noted. Vulvar and vaginal tumors account for 2.4% -3% of canine neoplasms. They are the most common canine female reproductive tumor after those of the mammary gland (17). However, tumors of the ovary and uterus are uncommon in dogs. This is probably due to the fact that a large portion of the canine population is neutered at an early age (18), so our study is correspondent completely with the previous studies due to the absence of tumor cases recording from ovary and uterus throughout the study period.

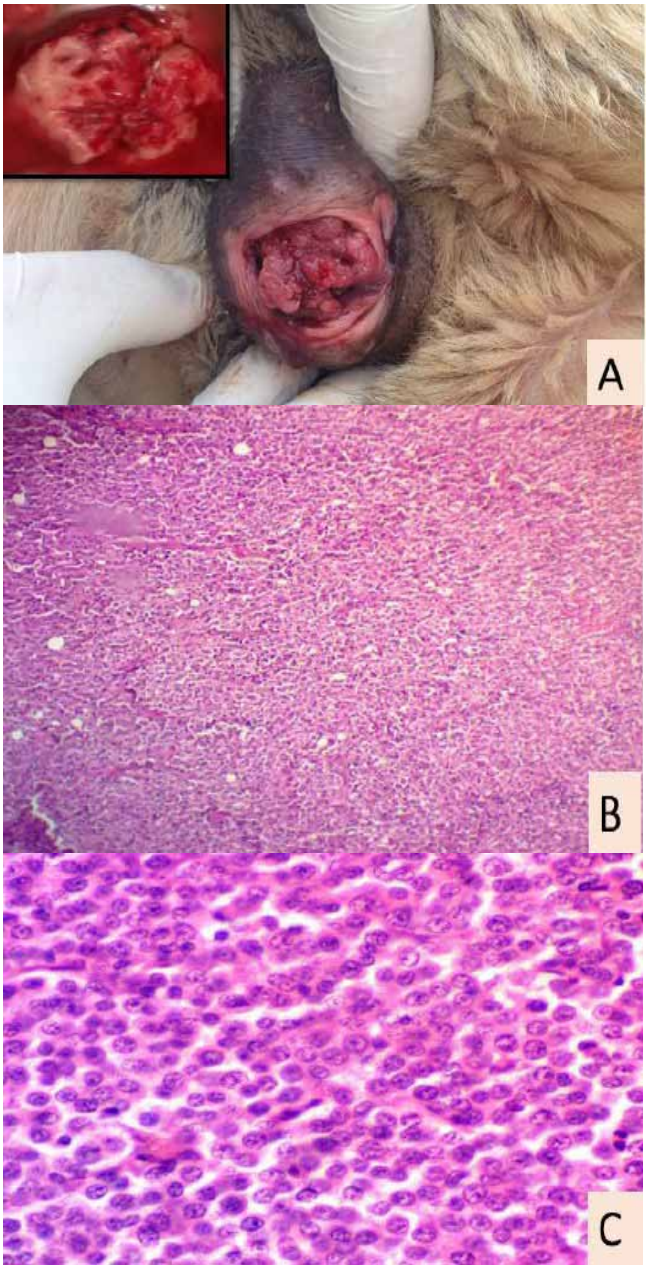

Figure 1: A: Enlargement of the vulva with mass and the excised mass presented by inserted rectangle had whitish-gray cut surface. Microscopically vulva section showed. B: Massive infiltration of the lamina propria by a small malignant lymphocytic cell population that had nested or cord-like appearance due to the stromal formation (H and E stain, bar = 100 μm). C: The cells were pleomorphic with scant eosinophilic cytoplasm and possess vesicular central to eccentric nuclei. The chromatin pattern was diffuse to finely granular, and prominent single nucleoli were observed centrally to paracentral and the cell boundaries were not clearly defined (H and E stain).

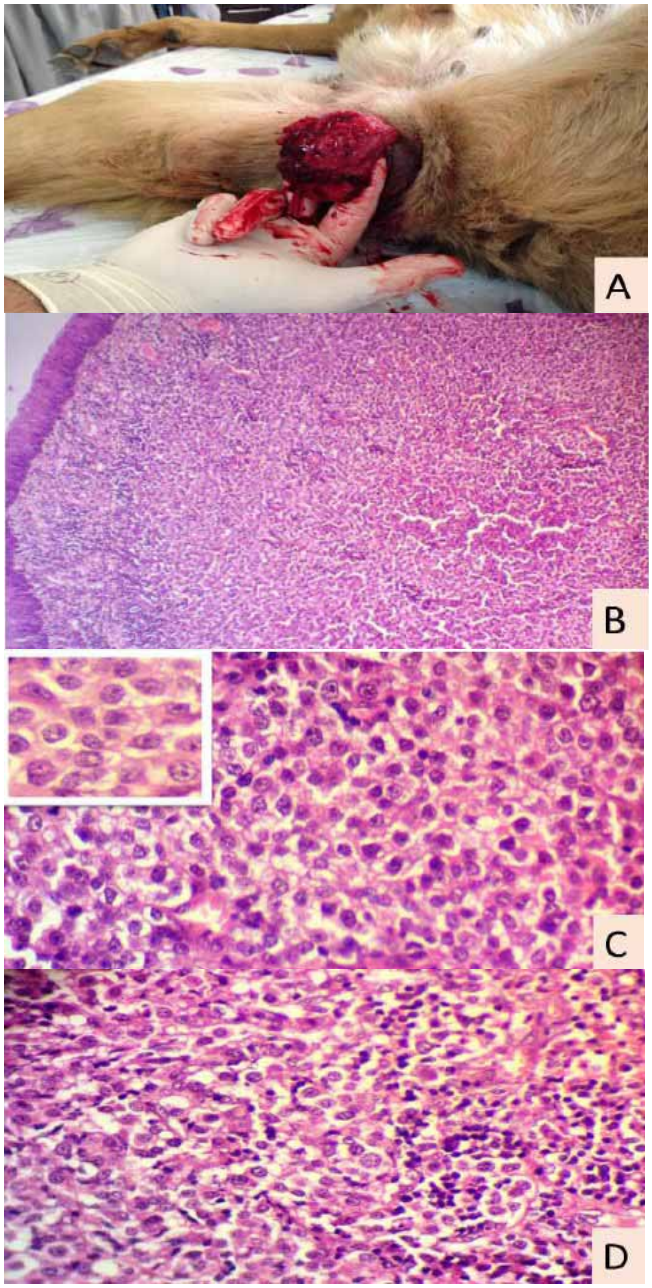

Figure 2: A: vaginal tumor was like cauliflower and attached by the gross pedicle. B: Vaginal tumor section was composed of diffuse sheets of round cells and scant amounts of connective tissue stroma. C: Individual neoplastic cells had round to oval with moderate eosinophilic cytoplasm often contain mitotic figures, nuclei have marginal chromatin clumping and one or two prominent nucleoli with several small and clear or discrete cytoplasmic vacuoles (An inserted image). D: An infiltration of lymphocytes, plasma cells, and macrophages interspersed among neoplastic cells.

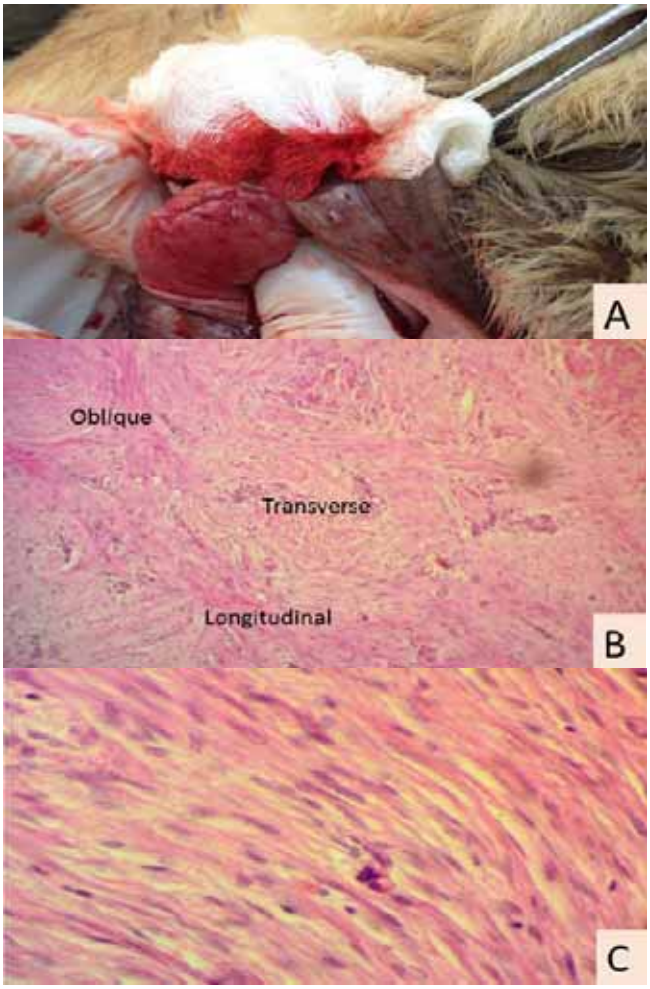

Figure 3: A: solitary mass was noncapsulated fleshy in texture. B: Tumor tissue formed bundles with different directions (whirled). C: Tumor cells resemble normal cells uniform, spindle-shaped, with a cigar-shaped nucleus and fibrillar cytoplasm.

Current treatment methods for benign tumors of vagina include surgical excision, cryosurgery, immunotherapy, and chemotherapy. Although chemotherapy, radiation therapy or diathermy alone or in combination with surgical excision can also be tried but cryotherapy is found superior due to its analgesic and hemostatic effects, apart from being simple, quick and economical, surgical removal of the tumors is commonly practiced (19). Surgical excision is the most successful in animals with few, small, circumscribed, accessible lesion with no local invasion or metastases (20).

The majority of vaginal lesions in our study were malignant; almost half were benign and arose from the mesenchyme in origin (leiomyomas). Malignant tumors were the mesenchyme in origin (Lymphoma and TVT) was recognized, inconsistent to the finding (21), who emphasized that benign neoplasms were more common in bitches that malignant one, maybe this disagreement due to our breed few numbers in Kurdistan region with decreasing numbers of cases and absence of data related to Hawshar bitches tumor recording, this is the first recording data of vaginal and vulvar tumor of this breed.

In the present study, the cases of diffuse small cell lymphoma showed recurrence with exception of the first case because the owner didn't return back it to seen the result after removing the neoplastic tissues, and this result is similar to the other studies who proved the aggressive pattern of this type of tumor that would be recurrent after local surgery (22). Our finding examined intact bitch that showed lower risk for developing lymphoma and the results are similar with all of the previously reported findings (23,24), who mentioned that, neutering in males and/or females in increasing the likelihood of lymphoma and intact females had a significantly lower risk of developing lymphoma, and this due to gonadal hormone organs removing, and altering the hormone that plays a role in cancer occurrence, and the study (25), who suggests early neutering, before an estrous period, the cells that could become neoplastic are not sensitized to estrogen and neutering would not affect disease occurrence. However, after exposure to estrogen through several estrous cycles, potentially neoplastic cells could be sensitized, but as long as the female is left intact, the estrogen is protective. Then, if neutered after several estrous cycles, the estrogen-sensitized cells could become neoplastic but still their mechanism is not well understood and need more data to know the effect of estrogen on this type of cancer.

Canine TVT is cauliflower-like, pedunculated, and nodular may be solitary or multiple and are almost located on the genitalia exhibited morphological features that did not differ from those described in the literature (26,27). Histopathologically it was well differentiated which complete close to the histiocytic origin and typical arrangements in sheets or cords (28). In the current study, the TVT mass is located in the caudal part of the vagina. TVT was not metastasis to vaginal submucosa or any organs. Surgical resection was performed with satisfactory results and no recurrence in all cases, Similar results were obtained by (29), who recording TVT tumor in different breeds with exception of Hawshar dog, no data recording the TVT tumor in this breed of dog, our study is the first.

Leiomyoma is benign, firm, white, nodular tumors of the vaginal wall and occurs most frequently in bitches. The tumor is made up of bundles of intertwining smooth muscle cells, frequently interspersed with collagen fibers (30). In the present study, local treatment of vaginal leiomyoma involved surgical excision of the mass. All the three tumor cases were removed per vulva that was raised from the smooth muscle wall of the vagina. An episiotomy is done for the larger and deep-seated one. Because it's the benign

tumor so the local surgical excision was enough and recurrence rate was reported in one out of three cases in dogs, after following up on of the case no recurrence had happened, so this procedure was similar to findings were obtained by other authors (31,32), who believed that the local surgery is the good choice for small sized neoplastic tissue resection without need of ovariohysterectomy.

The age for bitches with vaginal tumors in the present study has differed according to the type of tumor. However, the leiomyoma tumor cases currently found in the early age between 3-4 year of age when compared, that is in accordance with data in the literature (33). While disagreeing with other data (14), who recorded the mean age of this type of tumor is highest between 5-16 years of age in contrast to our study had occurred in elderly aged.

Furthermore, Hawshar bitch with transmissible venereal tumors were much younger than the other two types of tumor (Leiomyoma and lymphoma), by mean ages of 3 years old, which agree with this study (34), in this work the tumor was seen most commonly in young, sexually active mature dogs, although no age predilection was given. While the cases of lymphoma were much older than the other types of tumor developed between 4-5 years old which agree with the study of (35), who mentioned lymphoma is generally seen in mid-aged to older dogs (median age, 6-9 years).

Conclusion

In conclusion of this study the vulva, vagina or vulvovaginal diffuse small cell lymphoma, vaginal transmissible venereal tumor, and leiomyoma were the most among Hawshar dog, and the age with physical condition of dog were played an important role in cancer occurrence.

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