

Case Report

An Unusual Case of Residual Ovary Syndrome Associated with Subsurface Epithelial Cyst Adenoma Leading Hyperestrogenism and Transmissible Venereal Tumor in a Spayed Female Dog

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Keywords

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- Subsurface epithelial cyst adenoma
- Hyperestrogenism
- Canine
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Abstract

A six-year-old female spayed Alaska bitch was presented for vaginal bleeding. Cytological, ultrasonographic and endocrinological examinations revealed an ovarian problem leading hyperestrogenism and TVT. Operation was performed. To the authors' knowledge, this is the first reported case of an ovarian neoplastic condition and developing endocrine disorder after incomplete ovary removal, which brought out overt clinical estrus and mating willingness resulting in transmissible venereal tumor in a 6-year-old Alaska bitch.

ABBREVIATIONS

TVT: Transmissible Venereal Tumor; **SES:** Subsurface Epithelial Tumors.

INTRODUCTION

Epithelial, sex cord stromal and germ cell tumors are the ovarian tumor types in female dogs, account for 40% to 50% of reported canine ovarian tumors [1,2]. Epithelial cell tumors include papillary adenomas, papillary adenocarcinomas, cystadenomas and undifferentiated carcinomas [3]. In epithelial tumors, SES are numerous cysts of the canine ovary and commonly found in the bitch [4]. Subsurface epithelial tumors (SES) originate from ovarian surface by dilations of the normally occurring subsurface epithelial structures. The increasing frequency of SES in old dogs was reported, which the mean age of was nine years old [1,5]. They are not larger than 5 mm and the papillae epithelium is lining with single or multiple layers of cuboidal or columnar epithelial cells and is

surrounded with connective tissue stalks [1]. The ovarian tumors are mostly symptomatic and clinical effects of these tumors may be associated with abnormal oestrus cycles, vaginal discharge and pyometra/ cystic endometrial hyperplasia [1,2,6]. Although the mostly seen ovarian tumor in dogs is reported to be SES [4], to the authors' knowledge, hyperestrogenism associated with subsurface epithelial cyst adenoma leading Transmissible Venereal Tumor in a dog after an incomplete ovariohysterectomy has not previously been reported.

The present report describes a clinical case of a subsurface epithelial cystadenoma of residual ovary syndrome with Transmissible Venereal Tumor in 6-year-old Alaska bitch.

CASE PRESENTATION

A 6-year-old female, Alaska breed dog weighing 35 kg, was referred to Department of Obstetrics and Gynecology, Faculty of Veterinary Medicine, Uludag University, Bursa/ Turkey, with a history of vaginal bleeding for two months. She was fed with

home-prepared diet and housed indoor. Ovariohysterectomy had been carried out almost two years ago and the owner had witnessed mating behaviour 1.5 years after operation although she had no mating experience before ovariohysterectomy. It was also mentioned that the bitch had strong desire for mating at irregular intervals in the last six months.

The animal was physically healthy; rectal temperature, pulse and respiratory rates were within normal ranges. On abdominal palpation no pain or any abdominal mass was felt. Vaginal cytology specimens were prepared, specific TVT cells and intermediate cells were found. Hematological findings were within normal ranges. Serum progesterone and estradiol-17 β concentrations were found 0.8ng/mL and 26pg/mL, respectively. Abdominal ultrasound examination was carried out (5-7,5 MHz linear array transducer; Siemens Sonoline Prima, Siemens Medical System, USA) and a mass of 3-4 cm diameter with multiple anechoic cysts caudal to the right kidney was identified. According to clinical, laboratory and ultrasound findings, an ovarian mass, possibly a neoplasm, developed from ovarian remnant tissue causing hyperestrogenism was diagnosed. Surgical removal of the ovarian mass was suggested.

The bitch was sedated with xylazine hydrochloride at a dose of 2mg/kg (Alfazine %2, Holland) general anaesthesia was induced and then maintained with a combination of 5.5mg/kg ketamine (Alfamine %10, Holland) and 0.3 mg/kg diazepam (Diazem, Turkey) via intravenous injections. Laparotomy was performed and an ovoid mass in irregular shape consisting 4 cm, 3 cm and 2 cm abreast cysts and neighboring ovary on the right side were removed (Figure 1). Subcutaneous and skin incisions were closed with 1-absorbable (Vicryl, Switzerland) and 1-non-absorbable sutures (Ruschmed, Turkey), respectively. Post operatively Flunixin meglumine (1mg/kg, Memodil, Turkey) was used for analgesia intramuscularly and prophylactic antibiotic (Synulox 50mg, Pfizer, Belgium) was recommended.

Ovary was sent by Uludag University, Faculty of Veterinary Medicine, Obstetrics and Gynecology Department. It was fixed with 10% buffered neutral formaldehyde, embedded in paraffin and 5 μ m thick sections were stained with hematoxylin-eosin (H & E).

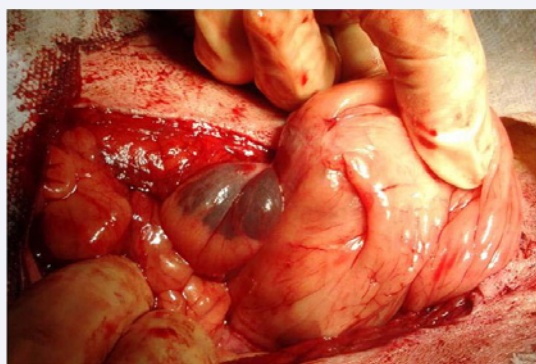


Figure 1 Removal of the ovoid mass in irregular shape consisting 4 cm, 3 cm and 2 cm abreast cysts and neighboring ovary during laparotomy.

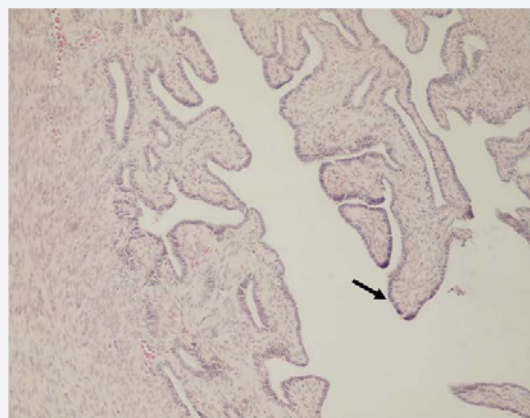


Figure 2 The cyst walls with single layered epithelium and papillary protrusions of epithelium were seen at black arrow (20 x Magnification).

Macroscopically, the right ovary was enlarged, 3 cm in diameter, and had three cystic formation, 2, 3, and 4 cm in diameter respectively. The 4 cm-cyst was round and the other two cysts were combined. Cysts were soft consistency and cut surface had cystic structures filled with brownish-colored liquid. Microscopically, the cyst walls were usually single layered epithelium structure but in some areas, papillary protrusions of epithelial cells were seen and there was a homogeneous pink colored fluid in lumen of cyst (Figure 2).

DISCUSSION

Epithelial tumors are accepted to be derived from the ovarian surface "epithelium", which are originate the lining epithelium of the ovary, subsurface epithelial structures (SES) and rete ovarii [7]. Between epithelial tumors, SES is commonly seen in the bitch. Macroscopically, epithelial tumors of the ovary are observed uni or bilateral, cystic, multinodular structure. The cut surface has multiple, yellow to brown fluid filled cysts. Microscopically, the papillae epithelium is lining with single or multiple layers of cuboidal or columnar epithelial cells and is surrounded with connective tissue stalks [1]. The macroscopic and microscopic findings in present case were similar with the reported information.

The secretion of various amounts of hormones, causing oestrus irregularities of follicular cysts and ovarian tumors had been reported in veterinary literature [8,9,10]. But there is not much information about the endocrine behavior of SES apart from endocrine disorders consistent with hyperestrogenism in some cases of adenomas [11]. The high concentration of estradiol 17 β and the bitch's willingness in mating and attractiveness to males is likely to be associated with hyperestrogenism secreted by subsurface epithelial cyst adenoma. The bitch had no overt estrus behaviors in relation to functional ovarian tissue almost 1.5 year after ovariohysterectomy. In this case it would be difficult to call the condition 'ovarian remnant syndrome' instead of 'residual ovary syndrome' because it was possibly due to surgical error during the removal of ovaries.

Except from ovarian tumors, benign reticuloendothelial tumor, TVT, is also common in young and sexually active female

dogs and it is usually transmitted during coitus [12,13].

In a spayed bitch TVT is mostly ignored when it's brought to a veterinary clinic with a history of vaginal bleeding. The history and detailed clinical, ultrasonographic and radiologic examinations are sometimes not sufficient to diagnosis of TVT in such cases. Cytological examination of samples should be carried out in order to diagnose TV [14]. The second tumor condition, TVT, is possibly associated with the endocrine disorder of over secretion of estradiol 17- β by subsurface epithelial cyst adenoma.

The case presented here was the first report of an ovarian neoplastic condition and developing endocrine disorder after incomplete ovary removal, which brought out overt clinical estrus and mating willingness resulting in transmissible venereal tumor in a 6-year-old Alaska bitch.

REFERENCES

1. MacLachlan NJ, Kennedy PC. Tumors of Genital Systems, In: Tumors in Domestic Animals. 4th edn. Ed. DJ Meuten. Iowa State Press, USA. 2002; 547-549.
2. Morris J, Dobson J. Small Animal Oncology, In: Small Animal Oncology. 1st edn. Eds J Morris and J Dobson. Wiley- Blackwell. 2001; 166-168.
3. Klein MK. Tumors of the female reproductive system, In: Small Animal Clinical Oncology. 4th edn. Eds SJ Withrow and MD Vail. W.B. Saunders, Philadelphia. 2007; 610-613.
4. Akihara Y, Shimoyama Y, Kawasako K, Komine M, Hirayama K, Kagawa Y, et al. Immunohistochemical evaluation of canine ovarian cysts. J Vet Med Sci. 2007; 69: 1033-1037.
5. McEntee K. Cysts in and around the Ovary, In: Reproductive Pathology of Domestic Mammals. Ed. K. McEntee. 1990, Academic Press pp 61.
6. Batista-Arteaga M, Santana M, Espinosa-de-los-Monteros A, Déniz S, Alamo D, Herráez P. Exuberant mucometra associated with atresia of the cervix in a queen. Reprod Domest Anim. 2012; 47: e71-74.
7. Nielsen SW, Misdorp W, McEntee K. Tumours of the ovary. Bull World Health Organ. 1976; 53: 203-215.
8. Olson PN, Wrigley RH, Husted PW, Bowen RA, Nett TM. Persistent estrus in the bitch. In: Textbook of Veterinary Internal Medicine. 7th edn. Eds. SJ Ettinger and EC Feldman. WB Saunders, Philadelphia. 1989; 1792-1796.
9. Johnston SD, Kustritz MVR, Olson PNS. Ovarian cysts, In: Canine and Feline Theriogenology. 1st edn. Eds. Johnston SD, Kustritz MVR, Olson PNS, WB Saunders Company, Philadelphia. 2001; 195-199
10. McCandlish IA, Munro CD, Breeze RG, Nash AS. Hormone producing ovarian tumours in the dog. Vet Rec. 1979; 105: 9-11.
11. Sforza M, Brachelente C, Lepri E, Mechelli L. Canine ovarian tumours: a retrospective study of 49 cases. Vet Res Commun. 2003; 27 Suppl 1: 359-361.
12. Calvet CA. Transmissible venereal tumor in the dog, In: Current veterinary therapy VIII. 3rd edn. Ed. Kirk RW. WB Saunders Company, Philadelphia. 1983; 413-415.
13. Rogers KS. Transmissible venereal tumor. Compendium on Continuing Education for the Practising Veterinarian. 1997; 19: 1036-1045.
14. Simoni R, Knoll JS. Canine transmissible venereal tumor: the cytologic clues. Vet Med. 2008; 296-304.

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