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

Gözde R. Özalp1*, M. Özgür Özyiğit1, Hayrettin Yıldız1, Volkan İpek2, Sevda İnan Öztürkoğlu2 and O. Nuri Akçay3

1Department of Obstetrics and Gynecology, Faculty of Veterinary Medicine, Uludag University, Turkey
2Department of Pathology, Faculty of Veterinary Medicine, Uludag University, Turkey
3Biyotip Laboratories, Nilüfer/Bursa, Turkey

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-17β 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. Laparatomy 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 Flunixine 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 µm thick sections were stained with hematoxylin-eosin (H & E).

**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 ovari [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 17β 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 ovariohystectomy. In this case it would be difficult to call the condition ‘ovarian remnant syndrome’ instead of ‘residuel 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