Papillary ovarian cystadenocarcinoma in a dog

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ABSTRACT

An 11-year-old female German Shepherd dog was presented for investigation of progressive enlargement of the abdomen, periodic bloody discharge from the vulva and rapid exhaustion. Transabdominal ultrasonography and lateral abdominal radiography demonstrated an echogenic formation with anechogenic cavities located cranial to the urinary bladder and a homogeneous shadow with an elliptical shape was located caudal to the rib arc. Both showed indistinct borders. Exploratory laparotomy identified bilateral ovarian masses and ovariohysterectomy was performed. Histopathology confirmed ovarian cystadenocarcinoma. The dog remained clinically normal without evidence of metastatic disease 4 months after surgery. Papillary cystadenocarcinoma in the bitch could affect both ovaries and manifests with a rapid growth rate and clinical signs such as rapid exhaustion, abdominal enlargement and vulval discharge. Ovariohysterectomy is the treatment option.

Key words: bitch, diagnosis, ovarian tumour, treatment.

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INTRODUCTION

Canine ovarian tumours are divided into 3 groups depending on their origin; germ cell tumours, sex-cord stromal tumours and epithelial cell tumours[7,10].

Germ cell tumours include dysgerminomas, teratomas and embryonal carcinomas. Stromal tumours include granulosa-theca cell tumours, thecomas and luteomas. Epithelial neoplasms make up about 40–50 % of all ovarian growths and originate from structures under the ovarian epithelial surface. This is characteristic only in the bitch. Their growth is most commonly papillary (adenoma or adenocarcinoma) or cystic (adenoma or adenocarcinoma)[4,9]. Papillary adenocarcinomas could affect one or both ovaries. They are characterised by a large size and there is involvement of the ovarian stroma, bursa and in most cases, the peritoneum. When metastases are present, they appear in the kidneys, mesenteric lymph nodes and in the lungs. Clinically excretory, alimentary and respiratory disorders may be present. Cystadenomas originate from the *rete ovarii,* generally affecting one or, very rarely, both ovaries. They are composed of multiple thin-walled cysts filled a with transparent fluid[1,3,6]. Ovarian tumours cause various disorders in the sexual cycle such as anoestrus, nymphomania, masculinisation, hyperadrenocorticism and alopecia, or they could be asymptomatic[12,13].

The present report records the clinical signs, ultrasonogaraphic, radiographic, surgical, pathoanatomical findings and the therapy of a bilateral ovarian cystadenocarcinoma in an 11-year-old bitch.

CASE HISTORY

On 5 May 2004 an 11-year-old female German Shepherd dog, weighing 41 kg, was presented to the Clinic of Obstetrics, Gynaecology and Andrology of the Faculty of Veterinary Medicine, Stara Zagora, for examination and treatment. The animal had given birth twice, once at the age of 4 years and again at the age of 6 years.

During the 2nd parturition, a malformed foetus was born and the bitch was treated for uterine inflammation. The last oestrus was 40 days prior to the examination by the referring veterinary surgeon. Thereafter progressive enlargement of the abdomen, periodic bloody discharge from the vulva and incontinence were observed.

The haematological parameters – haemoglobin content (Hb), red blood cell counts (RBC), haematocrit and white blood cell counts (WBC) – were analysed with an automated blood analyser (Serono Plus, Germany). Transabdominal ultrasonography was performed with ultrasonic equipment (Aloka SSD 500 Micrus, Tokyo, Japan) with a 5 MHz linear transducer and Mitsubishi P91E printer.

Lateral abdominal radiography was also performed. An exploratory laparotomy and ovariohysterectomy were done by the routine operative techniques, using the median approach along the linea alba.

The material for the histopathological study was fixed in 10 % neutral formalin and prepared according to routine histological procedures. The tissue sections were stained with haematoxilyn/eosin (H&E).

Clinical examination

The body temperature was 38.5 °C; heart rate 80/min; respiratory rate 38/min. Marked enlargement of the abdomen was apparent. Palpation revealed a hard abdominal mass reaching the diaphragm. No discharge from the vulva was noted.

Ultrasonography

The ultrasonograph showed an echogenic structure, located cranial to the urinary bladder, filled with anechogenic cavities with irregular margins and hyperechogenic walls (Fig. 1).

Radiography

An intensive, homogeneous shadow with and elliptical shape and indistinct borders, located caudal to the rib arc, was observed.

Haematology

Haemoglobin content was 169 g/ℓ; RBC, 7 T/ℓ; haematocrit, 0.49 ℓ/ℓ; and WBC, 24.9 g/ℓ.

Surgery

After obtaining the owner's consent, an exploratory laparotomy and ovariohysterectomy were performed. Premedication was done with 0.04 mg/kg atropine sulphate (Sopharma, Bulgaria) percutaneously. Ten minutes later, induction of anaesthesia was performed intravenously with 9 mg/kg ketamine (Alfasan, Holland) and 0.5 mg/kg diazepam (Sopharma, Bulgaria). Anaesthesia was

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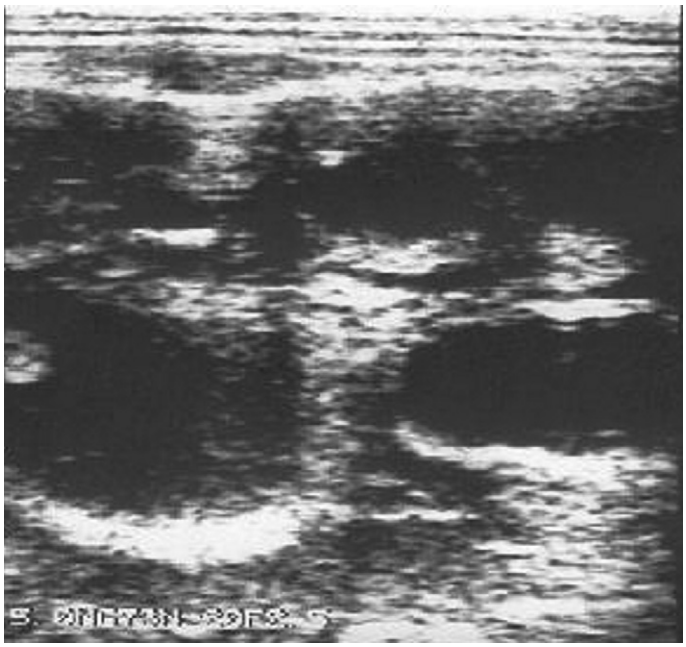

Fig. 1: **Transabdominal ultrasonography. Visualisation of anechoinic cavities located in the ovarian stroma.**

maintained with halothane gas (Narcotan, Leciva, Czech Republic).

The ovarian bursa was not affected whereas the abdominal organs (spleen, liver, intestines) were displaced cranially towards the diaphragm. The left ovary had atypical dimensions and shape, but was smaller than the contralateral one (Fig. 2). The dimensions of the uterus were normal for the breed and the age of the animal. On its surface, single or multiple vesicles filled with pale yellow fluid were observed. There were no changes in the omentum and the bladder.

The post-operative treatment included fluid therapy, administration of an analgesic *per os* (acetaminophen 15 mg/kg; Paracetamol, Sopharma, Bulgaria), antibiotics intramuscularly (30 mg/kg lincomycin-spectinomycin; Alfasan, Holland) and vitamins intramuscularly (4 mℓ; Vitasol AD_3EC, Richter Pharma, Austria) per day for 7 days. The status of the dog was monitored daily.

Macroscopic and histological findings

The right ovary had a smooth shape, dense texture, a longitudinal diameter of 320 mm and a mass of 7.8 kg. The cut surface showed multiple 5–70 mm cavities filled with a watery yellowish fluid. Histopathological examination showed cysts of various dimensions. No normal ovarian tissue was observed.

The left ovary had an oval shape, dense texture, grey-yellowish cut surface, a longitudinal diameter of 55 mm and a mass of 490 g. In some areas of the neoplastic growth, small cystic cavities filled with serous fluid were present. The histopathological study revealed papillary depressions of the fibrovascular stroma, surrounded by a single layer of cuboidal epithelium showing signs of malignancy. (Fig. 3).

The tissue section of uterine horns revealed small (2–3-mm) vesicles filled with fluid projecting above the mucosa. The histological study of the uterus revealed small cysts located in the lamina propria mucosae (endometritis chronica cystica).

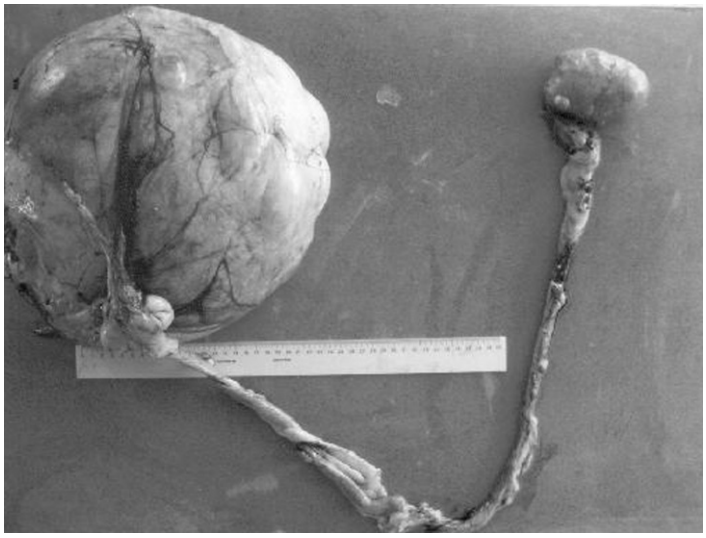

Fig. 2: **Marked asymmetry of the ovaries, the right ovary being bigger that the left ovary. The dimensions of the uterus are normal.**

Post-operative recovery

Appetite and water intake was reduced for 3 days after removal of the tumours but the body temperature was within normal limits. On day 3 the dog started eating and drinking, and 11 days after surgery a follow-up examination was performed and the skin sutures removed. At present, the general condition of the patient is good.

DISCUSSION

This case report showed that an ovarian papillary cystadenocarcinoma could grow and show clinical signs characterised by rapid exhaustion, abdominal swelling and vulval discharge, although previous authors did not note any obvious clinical abnormalites[3,12].

Ovarian tumours are classified depending on their ultrasonographic appearance as solid, solid with a cystic component and cystic[2]. In this case the ultrasonographic finding was suggestive of a cystic pattern.

The intermittent vulvar discharge and increased white blood cell count were suggestive of uterine inflammation. According to Klein[8] and Pluhar[11] these signs are characteristic of granulosa-theca cell tumours and are due to secretion of oestrogens and progesterone by the neoplasm. In these cases, the uterus is hardly differentiated and visualised by ultrasonography because of the size of the tumour.

Rapid growth could be regarded as a sign of malignancy, and this was confirmed by histological examination of the specimen. No metastases were evident in thoracic, abdominal and skeletal radiography 30 days after surgery.

Exploratory coeliotomy and ovariohysterectomy are recommended in patients such as the present one as other treatment options for neoplasms (radiotherapy, chemotherapy and immunotherapy) are not adequate[3,5]. Control radiography is recommended after the removal of the tumour mass. When metastatic foci in other organs are present, chemo- or immunotherapy may prolong the patient's life.

In conclusion, this case report shows

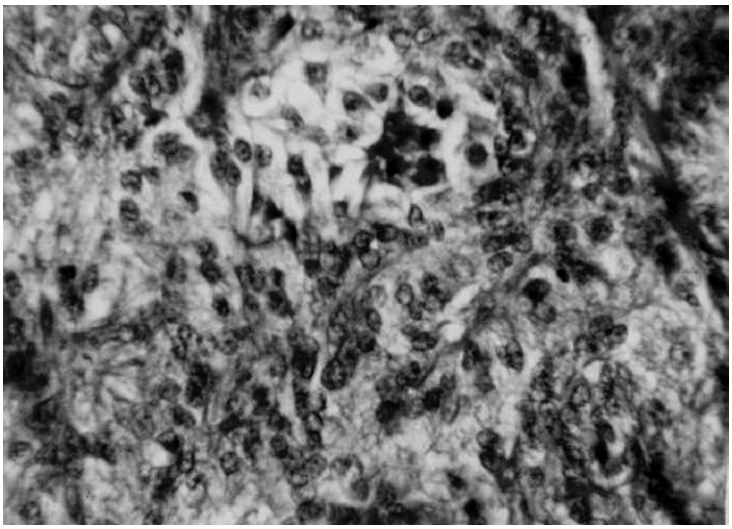

Fig. 3: **Histological cross-section of the left ovary. Clusters of pleiomorphic cells with histological signs of malignancy are seen.** H&E, ×400.

that papillary cystadenocarcinoma in the bitch could affect both ovaries. It has a rapid growth rate and clinical signs of rapid exhaustion, abdominal swelling and vulval discharge may be seen. A precise conclusion could be given following a exploratory laparotomy and histological study. Ovariohysterectomy is the most effective treatment option.

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