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Diagnosis and successful surgical management of complicated granulosa cell tumour with cystic endometrial hyperplasia in a Beagle dog

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Ovarian granulosa cell tumours (GCTs) are neoplasms originating from granulosa cells in the ovary. Ovarian tumours are commonly seen in old intact female dogs and are classified into germ cell tumours, sex cord-stromal tumours, and epithelial cell tumours (Kennedy, 1998). Among all histological types, the sex cord stromal cell-derived granulosa cell tumour is the most frequently observed. GCTs cause an increase in the levels of estradiol, progesterone, and inhibin-A leading to clinical signs such as prolonged oestrus, vulvar swelling with discharge, and persistent abdominal enlargement (Pluhar *et al.*, 1995). Additionally, nymphomania, virilisation, alopecia, and hyperadrenocorticism may occur (Buijtels *et al.*, 2010; Chung *et al.*, 2013). GCTs in female dogs can manifest as solid, follicular, cystic, polycystic, or a combination of these microscopic forms.

An 8-yr-old intact, nulliparous female Beagle dog weighing 15 kg was brought with a chief complaint of sero-sanguineous vaginal discharge and anorexia for one week. During the general clinical examination, the animal appeared active but had abdominal distension (Fig.1), and pain was evident upon palpation. The physiological parameters, including the patient's heart rate, pulse rate, respiration rate and rectal temperature were normal. Additionally, the haematological and biochemical values were within the standard reference range. Abdominal ultrasonography revealed enlarged uterus with cystic endometrial hyperplasia and large tumorous right ovary with heterogeneous parenchyma and multiple follicular cysts (Fig. 2). Thoracic radiography confirmed no metastatic spread. It was decided to

Fig.1: Severely distended abdomen on the day of presentation.

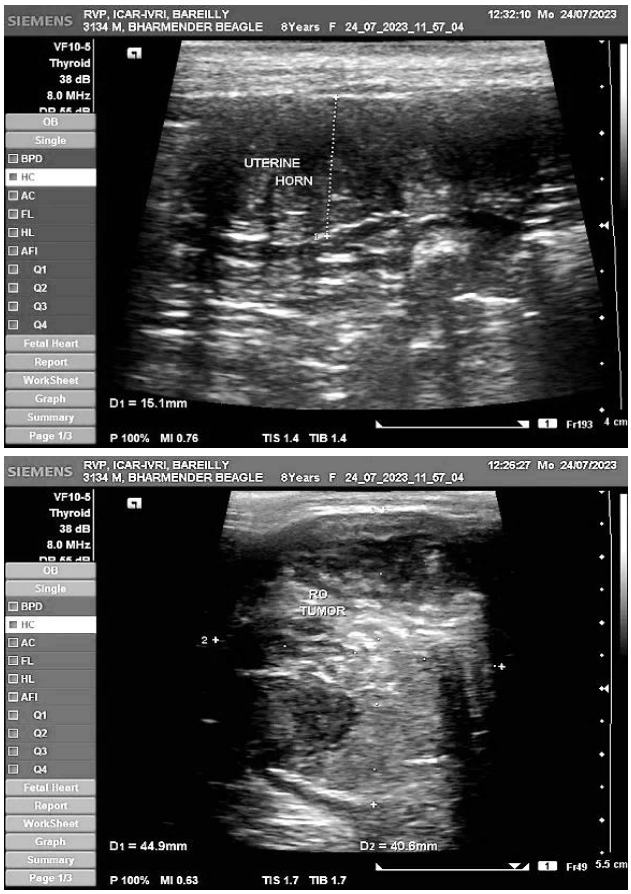

Fig. 2: (a) Sagittal sonographic image of ovarian granulosa cell tumour (between callipers) with heterogeneous parenchyma; (b) Sagittal sonographic image, showing an enlarged uterus (between callipers) with cystic endometrial hyperplasia was identified as the presence of multiple small cyst-like lesions throughout the uterine wall.

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perform ovario-hysterectomy under general anaesthesia, and the dog was subjected to 12 hr fasting. Premedication was done with subcutaneous administration of atropine sulphate (0.045 mg/kg body wt.), followed by intravenous administration of diazepam (0.5 mg/kg body wt.) and butorphanol (0.2 mg/kg body wt.). Anaesthesia was induced with ketamine HCl (5 mg/kg body wt.) and maintained using isoflurane at 2-2.5%.

After aseptic preparation, a routine ventral midline incision was made along the linea alba. Subsequent explorations of the peritoneal cavity revealed a tumorous right ovary and an enlarged uterus. The ovary was adhered to the gastric serosa and splenic capsule (Fig. 3). These adhesions were carefully removed, and an ovario-hysterectomy was performed as a standard procedure. The abdominal muscles were sutured in a simple interrupted pattern using 1-0 polyglactin 910, followed by the subcutaneous tissues in the subcuticular pattern and skin was sutured in the horizontal Mattress pattern for proper apposition and healing of the tissues. The tissue sample was sent for the histopathological evaluation and it revealed the tumorous mass as granulosa cell tumour.

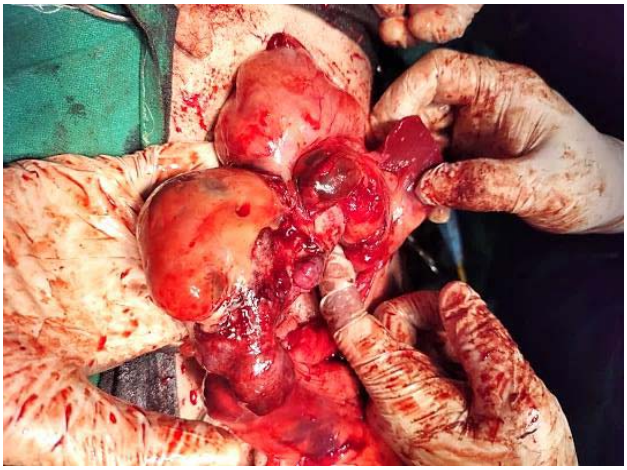

Fig. 3: Adhesions of the ovary with the gastric mucosa and splenic capsule.

Postoperatively the animal was administered with ceftriaxone-tazobactum (15 mg/kg body wt.), pantoprazole (1 mg/kg body wt.) and meloxicam (0.3 mg/kg body wt.) for five days. A six-month postoperative follow-up revealed that the dog had recovered without any complications.

Ultrasonography and radiography are crucial diagnostic tools for the early detection of malignancies such as GCTs. Studies reveal that neoplastic processes are predominantly observed in older animals (Klein, 2007). Endocrine-related cancers often result in hormonal dysregulation (Zanghi *et al.*, 2007), with GCT potentially leading to elevated oestrogen levels that could explain the observed clinical signs in affected cases (Troisi *et al.*, 2023). According to Walter *et al*. (2018), GCTs are typically unilateral with well-defined cream-coloured borders. The female dog in this study also presented with a right-sided unilateral ovarian tumour (GCT), similar in nature to those described in previous studies. Cystic endometrial hyperplasia (CEH), often linked to GCT, reflects oestrogen or progesterone effects on the endometrium and ovario-hysterectomy is the recommended standard treatment for GCT (Sivacolundhu *et al.*, 2001).

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