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## Acquired Hematometra in a Dalmatian Dog: A pathomorphological report

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### Abstract

A three-year-old pregnant Dalmatian dog was brought to the Madras Veterinary College Teaching Hospital with a history of yet to whelp. During the course of examination, animal died and was sent to the Department of Veterinary Pathology for necropsy examination. Grossly, congested visible mucous membrane, distended uterine loops, distended right uterine horn with fluid, slightly turgid left horn, congested and haemorrhagic serosa and fat adjoining the right horn of the uterus with suffusive haemorrhages were seen. Upon incision, one litre of frank blood admixed with 500 gm of blood clots were observed in the right horn and left horn contained about 500 ml of frank blood. Uterine mucosa revealed haemorrhages and grey white areas. Microscopical examination of the uterine tissue revealed haemorrhages and blood clots in the uterine lumen and haemorrhages on all the layers of the uterus. Based on the gross and histopathological examination, the uterine tissue had acquired haemometra. The death might have occurred due to hypovolemic shock.

**Keywords:** Dog, acquired haemometra, pathomorphology

### 1. Introduction

Haemometra is otherwise known as haemorrhagic uterine contents and is a rarely reported condition. Haemometra and metorrhagia are uncommon clinical conditions<sup>[1]</sup>. Haemometra is a rare condition among the cystic endometrial hyperplasia and pyometra complex and is rarely reported<sup>[2]</sup>.

Cystic endometrial hyperplasia might lead to haemometra, hydrometra or mucometra and these conditions might occur due to obstruction of lumen of uterus, cervix or vagina<sup>3</sup>. The character of accumulated blood tends to be sterile. The diagnosis of canine uterine conditions could be made with ultrasonography and radiology<sup>4</sup>. But a diagnosis of haemometra is not made until a laparotomy is performed and gross findings are assessed. Haemometra is a life-threatening condition and rapid therapeutic intervention are necessary to prevent fatal outcome<sup>2</sup>.

The present paper reports on the occurrence of haemometra with association of cystic endometrial hyperplasia in a three-year-old Dalmatian dog.

### 2. Materials and Methods

A three-year-old female Dalmatian dog was presented to the Madras Veterinary College Teaching Hospital with a history of pregnant for about 61 days and yet to whelp. The dog collapsed in the midst of examination and was brought to the Department of Veterinary Pathology, Madras Veterinary College, Chennai – 600 007 for necropsy.

Post-mortem examination was conducted. The gross lesions were recorded and respective organs were collected for histopathology which showed specific gross changes. Tissues were collected from various locations of uterus. The formalinized tissue sections were processed and cut into 4µm thickness and stained with Haematoxylin and Eosin (H&E) stain following standard procedure.

### 3. Results

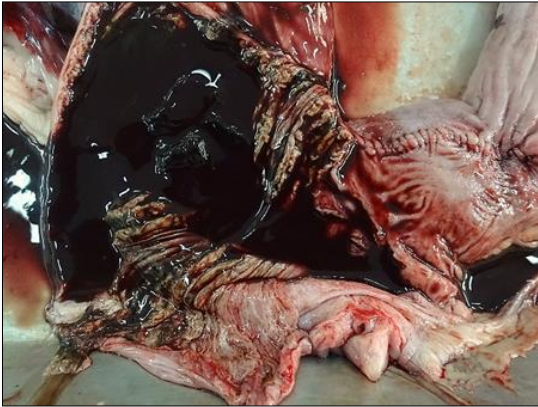
External gross examination revealed congested visible mucous membranes. Internal gross examination revealed distended uterine loops in the abdominal cavity. The right uterine horn was distended with fluid and the left horn was slightly turgid. The serosa and the fat adjoining the right horn of uterus revealed congestion and haemorrhages which was suffusive along the broader pole of the right horn. On incision, the right horn contained about one litre of frank blood admixed with about 500 gm of blood clots and the left horn contained about 500 ml of

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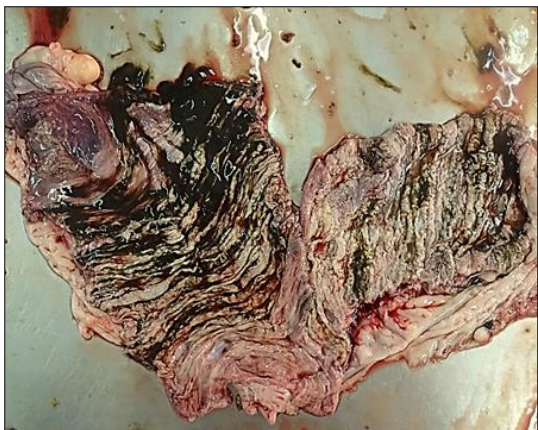
frank blood (Fig. 1 and 2). The mucosa revealed haemorrhages and grey white areas alternatively (Fig. 3). Histopathological examination of the uterine tissue was performed. Uterine lumen contained haemorrhages and blood clots (Fig. 4). Haemorrhages were also seen on all the layers of the uterus. Some of the endometrial glands were compressed and some of the endometrial glands lumen contained haemorrhages with some of them being cystic (Fig. 5). Mucosal layer revealed hyperplasia and multifocal vacuolations. In few areas, mucosal epithelium was seen invagination into the endometrial lumen (Fig. 6). Based on the gross and histopathological examination, the case was diagnosed as acquired haemometra.



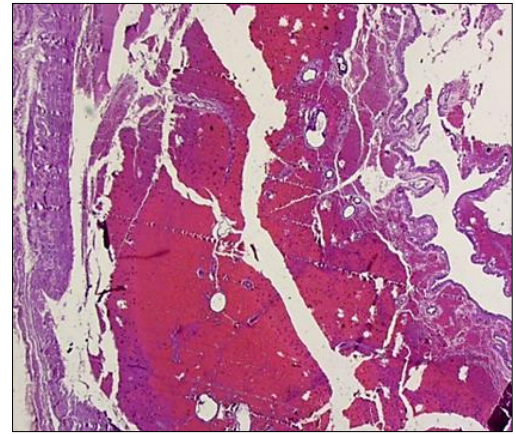
**Fig. 1:** The left uterine horn – 500 ml of frank blood was seen in the lumen



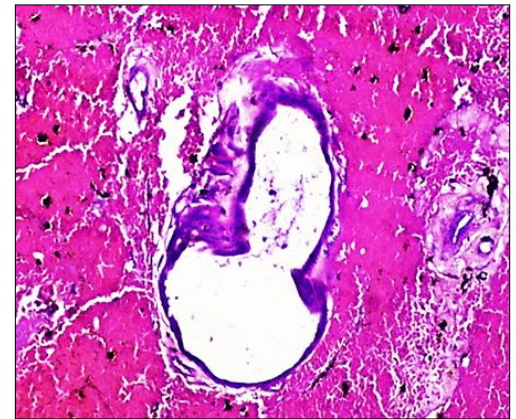
**Fig 2:** The right uterine horn contained frank blood admixed with 500 gm of blood clots.



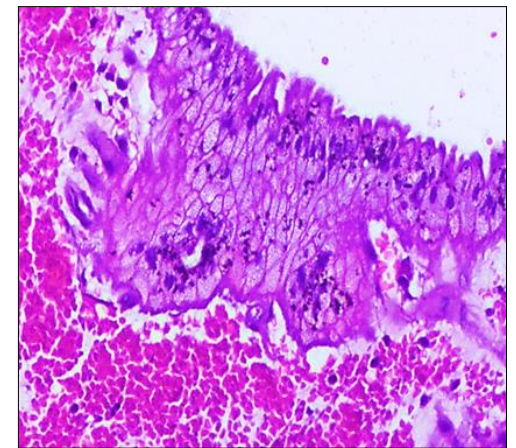
**Fig 3:** Uterine mucosa – Haemorrhages and grey white areas alternatively



**Fig 4:** Dog – Uterus – Histopathology - Lumen contained haemorrhages and blood clots. H&E 1.25x



**Fig 5:** Dog- Uterus – Some of the endometrial glands revealed cystic changes with flattened epithelium H&E 10x



**Fig 6:** Dog- Uterus – Hyperplasia of the mucosal layer with invagination into the endometrial lumen H&E 10x

#### 4. Discussion

Troxel *et al.* (2002) <sup>[1]</sup> reported that haemometra is a rarely reported condition which is in agreement with the present findings. Haemometra is considered as one of the emergency case and early diagnosis with rapid therapeutic treatment are essential to prevent the fatality caused by haemometra <sup>[5]</sup>. Differential diagnosis of mucometra, hydrometra, haematometra can be made based on cytological examination, complete blood count, serum biochemical analysis, urinalysis and ultrasonography <sup>[6]</sup>. However, in the present case, it was diagnosed by gross and histopathological examination due to sudden collapse of the animal during the examination. Histopathological examination of the present case revealed

blood clots and haemorrhages in the uterine lumen and haemorrhages on all the layers of the uterus. Few glands showed cystic changes with haemorrhages. Troxel *et al.* (2002) [1] reported marked hyperplasia of the endometrial glands with cystic dilatation and filled with proteinaceous secretory material mixed with blood and neutrophils and diagnosed as severe pyometra with marked cystic endometrial hyperplasia. While in the present case, we have recorded blood clots and haemorrhages in the lumen, few cystic endometrial glands dilatations with hyperplasia and it was confirmed as haemometra associated with cystic endometrial hyperplasia. Gross examination revealed only blood clots and haemorrhages and did not reveal any cystic changes.

The various reported aetiologies of haemometra and metrorrhagia are *viz.*, postpartum subinvolution of placental sites [7], anticoagulant rodenticide toxicity [8], other acquired coagulation deficiencies, uterine trauma, neoplasia [9, 10], placental necrosis [6], idiopathic and pubertal metrorrhagia [11], post mortem endometritis [12, 13]. In the present case, it was diagnosed by gross and histopathological examination. In the present case, the aetiology of haemometra is unclear due to the lack of proper history from the owner. However, the case was associated with cystic endometrial hyperplasia in which similar reports of concurrence with haemometra and histopathological findings were in accordance with the previous reports [1, 14, 2].

When the suspicion of haemometra is arrived, surgical intervention by ovariohysterectomy should be done as early as possible due to complications such as bacteraemia and endotoxemia [1]. In the present case, we did not perform ovariohysterectomy as the animal collapsed during the period of clinical examination and death might be attributed to hypovolemic shock.

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