

Spontaneous Uterine Hematoma in a Cat

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ABSTRACT

Background: The current case report describes uterine hematoma in a cat. Hematomas are blood accumulation within tissues due to hemorrhage. Although, the precise etiology of uterine hematoma is difficult to determine in animals, uterine hemorrhages are believed to be in association with the estrus cycle or cystic endometrial hyperplasia-pyometra complex induced by progesterone. In humans, uterine hematomas in association with abortion and premature delivery are occasionally reported. Clinical signs include abdominal distension, increased water uptake, and anorexia according to the previous literature. The recommended treatment for the uterine hematoma is ovariohysterectomy in veterinary medicine. To the authors' knowledge, there are only two reported cases of uterine hematoma in the veterinary literature, one in a dog and another in a mare and this is the first reported case of a spontaneous uterine hematoma in a cat.

Case: A 10-year-old female Persian cat presented with a few-weeks history of anorexia and lethargy. On history taking from the owner, there was no history of trauma or injury. On physical examination, a skin mass between the 3rd and 4th mammary gland in the right caudal abdomen was identified. A complete blood count was unremarkable. On serum chemistry analysis, an increased blood urea nitrogen was identified. Coagulation panels including activated partial thromboplastin time (APTT) and prothrombin time (PT) were within the normal range. Ultrasonography revealed a well-defined mass around the right uterine horn and computed tomographic examination showed a non-contrast-enhancing mass connected to the right uterine horn. Since neoplasia was not completely ruled out, ovariohysterectomy with removal of the mass followed by the right unilateral mastectomy was performed. On gross examination, there was no fluid within the uterus. Subsequently, the uterine was submitted for cytologic examination, revealing no inflammatory cells or bacteria. Histologically, the mass of the abdominal skin was ductular adenoma. The uterine mass histology was consistent with a blood clot with fibrins, indicating hematoma, and there were no signs of significant inflammation or neoplasia. The patient was healthy and had a good appetite on the 1st postoperative day; however, the cat died on day 7 due to acute renal failure, which was assumed to result from preoperative condition of the cat. However, the precise reason of the death could not be identified because necropsy was declined by the owner. Based on the history from the owner, blood examination findings, and gross appearance of both thickened uterine horns, extensive hemorrhage during the last estrus was suspected to be the cause of uterine hematoma. Since this is the 1st case report describing spontaneous hematoma in the uterine, the hematoma should be considered as a differential diagnosis of the uterine mass.

Discussion: In humans, uterine hematoma frequently complicates pregnancy, especially in the 1st trimester of gestation. A large intramural uterine hematoma in association with pregnancy has been also reported. Compared to humans, uterine hematoma is extremely rare in veterinary medicine. There are only 2 reported cases of uterine hematoma including 1 in a dog and another in a mare. Although the exact etiology of uterine hematoma in animals is unclear, it is assumed that uterine hematoma is associated with uterine hemorrhage or iatrogenic damage. In the case reported here, there was no evidence suggestive of trauma or recent abdominal surgery. Moreover, considering coagulation panels within the normal range, coagulation diseases were also excluded. Massive local extravasation of erythrocytes during a recent estrus cycle has been proposed as an etiology of uterine hematoma. In the present case, based on the history from the owner, blood examination findings, and gross appearance of both thickened uterine horns, extensive hemorrhage during the last estrus was suspected to be the cause of uterine hematoma. However, the exact etiology remains unclear. The recommended treatment for the uterine hematoma is ovariohysterectomy in veterinary medicine. Although the number of cases is insufficient, the metastasis of the mammary gland tumor to the various organs including inguinal lymph nodes, uterus, lungs, heart, muscle, or urinary bladder has been reported previously. In the case reported here, since the skin mass was identified between the right 3rd and 4th mammary gland in addition to the mass within the right uterine horn, metastasis was not completely ruled out. Thus, the right unilateral mastectomy was performed in addition to the ovariohysterectomy. However, considering the mammary gland tumor was identified as benign ductular adenoma by histopathologic evaluation, the uterine lesion was assumed to be unrelated to the mammary gland tumor.

Keywords: cat, ovariohysterectomy, uterine hematoma, uterine hemorrhage, uterus.

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INTRODUCTION

Hematomas are tumor-like lesions that occur in tissues due to hemorrhage [2]. In cats, Hematomas are tumor-like lesions that occur in tissues due to hemorrhage [2]. In cats, hematomas can be found at the ear cartilage, scrotum, and perineum [1,7,14]. However, uterine hematomas in cats are not reported so far. The precise etiology of uterine hematoma is impossible to determine in animals; however, uterine hemorrhages are believed to be associated with the estrus cycle [8]. In humans, uterine hematomas in association with abortion and premature delivery are occasionally reported [4]. We believe that there are only 2 reported cases of uterine hematoma in the veterinary literature, 1 in a dog and another in a mare [2,12]. To the authors' knowledge, this is the 1st reported case of a spontaneous uterine hematoma in a cat.

CASE

A 10-year-old female Persian cat weighing 3.76 kg presented with a few-weeks history of anorexia and lethargy. The owner reported the cat was showing regular estrus cycle. However, the owner did not know when the last estrus had occurred. On physical examination, a moderate dehydration was identified as evidenced by a loss of skin turgor. In addition, a mass was palpable between the 3rd and 4th mammary gland in the right caudal abdomen. The cat showed pain palpating the right mid-abdomen. Results of a complete blood count including thrombocyte were unremarkable. On serum chemistry analysis, an increased blood urea nitrogen (BUN, 49 mg/dL; reference range [RR]: 16-36 mg/dL) was identified. Coagulation panels including activated partial thromboplastin time (APTT) and prothrombin time (PT) were within the normal range. Feline leukemia virus antigen and feline immunodeficiency virus antibody test¹ (SNAP combo test) were negative. The total thyroxine level was 1.4 (RR: 0.8-4.7). On thoracic radiographic examination, interstitial lung pattern was identified all over the lung field and a small amount of pleural effusion was also found. Pleural fluid was acquired under ultrasonographic guidance. Total nucleated counted cells of the pleural fluid were within 1,000/ μ L. On abdominal radiography, decreased right kidney size and multiple radiopaque foci in the bilateral renal regions were identified. A round, soft tissue structure was also identified in the right mid-abdomen.

Echocardiography revealed left ventricular hypertrophy with diastolic dysfunction. Specifically, the left ventricular free wall was 9.27 mm and E:A ratio was 1.3, indicating pseudonormal filling pattern (stage 2). Systolic function was normal. On abdominal ultrasonography using a 4-18 MHz linear array transducer, the bilateral renal cortices were hyperechoic with reduced corticomedullary and definitions. Especially, the right kidney was atrophic with multiple calculi. Additionally, a right abdominal mass filled with echogenic fluid and a hyperechoic round material was observed adjacent to the right uterine horn (Figure 1). Computed tomography confirmed a hypoattenuated mass containing a hyperattenuated lesion connected to the right uterine horn (Figure 2). The lymph nodes adjacent to the mass were within normal range.

Since the possibility of malignancy of the uterine mass, with the consent of the owner, ovariohysterectomy (OHE) for the uterine mass and the right unilateral mastectomy for removal of the mass at the right caudal abdomen were decided. Since the early stage of chronic kidney disease was suspected, fluid therapy using normal saline supplemented with potassium chloride (40 mEq/L) was maintained at a rate of 5 mL/kg/h for a day prior to the surgery. The BUN and potassium chloride parameter became normal before surgery.

Butorphanol² [Butophan[®] - 0.5 mg/kg, intravenous (iv)] and amoxicillin-clavulanic acid³ [Amocla[®] -20 mg/kg, iv] were administered as premedication drugs. Subsequently, anesthesia was induced after alfaxalone⁴ injection [Alfaxan[®] - 4 mg/kg, iv]. Anesthesia was maintained with isoflurane⁵ inhalation [Isoflurane[®]]. Heart rate, temperature, blood pressure, end tidal concentration of CO₂ and isoflurane, and oxygen saturation were monitored throughout anesthesia.

With the patient placed in the dorsal recumbent position, a skin incision was made between the xiphoid and the pubis with N^o. 10 blade. After stab incision of the abdominal wall with N^o. 15 blade, a 10-15 cm incision was made using Metzenbaum scissors. The mass was located at the proximal end of the right uterine horn (Figure 3).

The remaining abdominal organs were unremarkable. The OHE and subsequent right unilateral mastectomy were performed. After flushing abdominal cavity several times with warmed normal saline, the

abdominal wall was closed by continuous suture pattern using Maxon 3-0. The skin was closed by simple interrupted suture pattern using Nylon 3-0 in a routine manner. No abnormalities were identified during anesthesia. Recovery from anesthesia was uneventful.

On gross examination, there was no fluid within the uterus. The ovaries were grossly normal without any lesion such as cystic structure. Subsequently, the uterine was submitted for cytologic examination. The cat was healthy and had a good appetite on the first postoperative day; however, BUN and creatinine concentration were increased on the second postoperative day. Despite fluid therapy using 0.9% normal saline, renal parameters such as BUN, creatinine, or phosphate were gradually increased. On day 6, BUN, creatinine, and phosphate were 216, 12.6, and 15.5 mg/dL, respectively. The cat died on day seven due to acute renal failure, which was assumed to result from preoperative condition of the cat. However, the precise reason of the death could not be identified because necropsy was declined by the owner.

A sample of the mass removed from the right abdominal skin and the hematoma were submitted

and fixed with a 4% formaldehyde solution, paraffin embedded, and sectioned at 5 micrometers for histologic examination. In the mass of the mammary gland, there was a well-circumscribed neoplastic mass composed of haphazardly tubules, nests and ducts separated by scant stroma. There were multiple dilated ducts. Neoplastic cells had indistinct cell borders, small amounts of eosinophilic cytoplasm, oval nuclei. There was mild anisokaryosis and anisocytosis. There were 2 mitoses in 10 HPF (2.37 mm²). There was no evidence of stromal or vascular invasion. The complete excision of the mass was identified (Figure 4A). The final diagnosis of the mass was ductular adenoma which is benign mammary gland tumor. On the other hand, the uterine mass (33 mm × 21 mm × 25 mm) was well encapsulated, with a darkish red to black wall and a thickness of approximately 1-2 mm. Histologically, multiple sections of the mass were examined and the tissue consisted of blood in fibrin. There were scattered degenerate neutrophils. Finally, the mass was diagnosed as a hematoma (Figure 4B). There were no neoplastic changes or microorganisms.

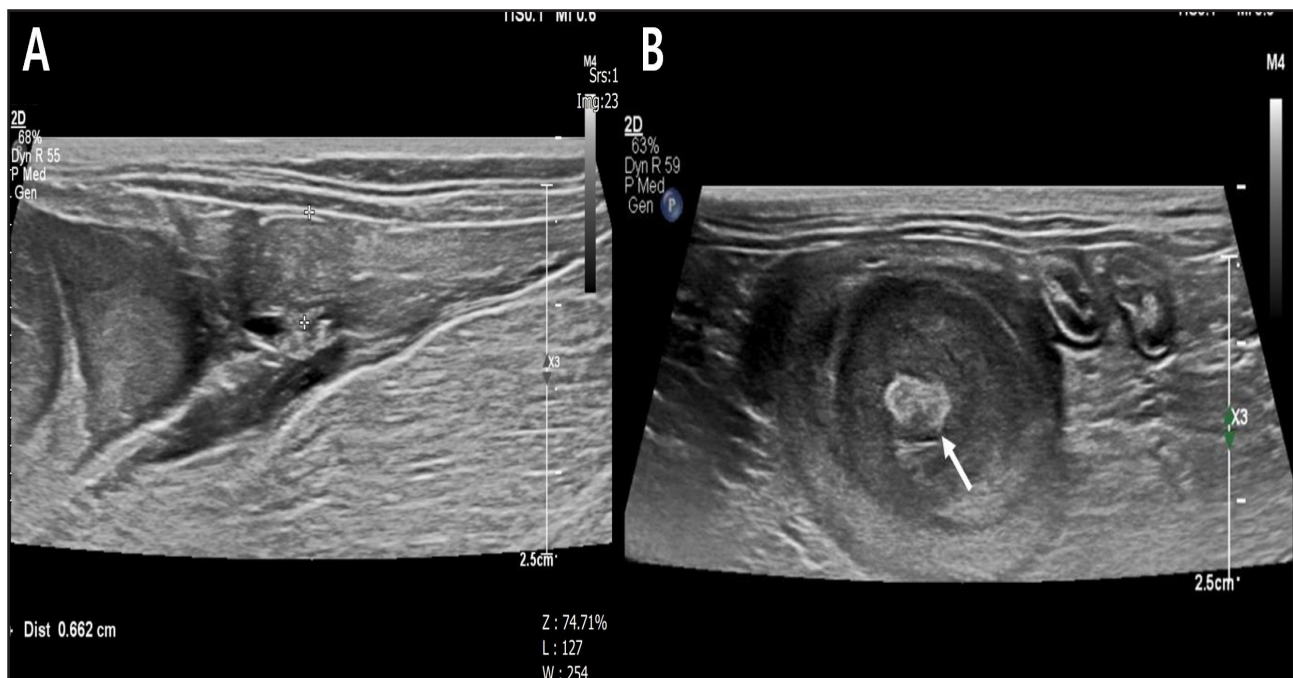


Figure 1. Abdominal ultrasonographic images. A- A well-defined, heterogenous mass located at the proximal end of the right uterine horn (arrowhead, M: mass). B- The hyperechoic material (arrow) within the mass.

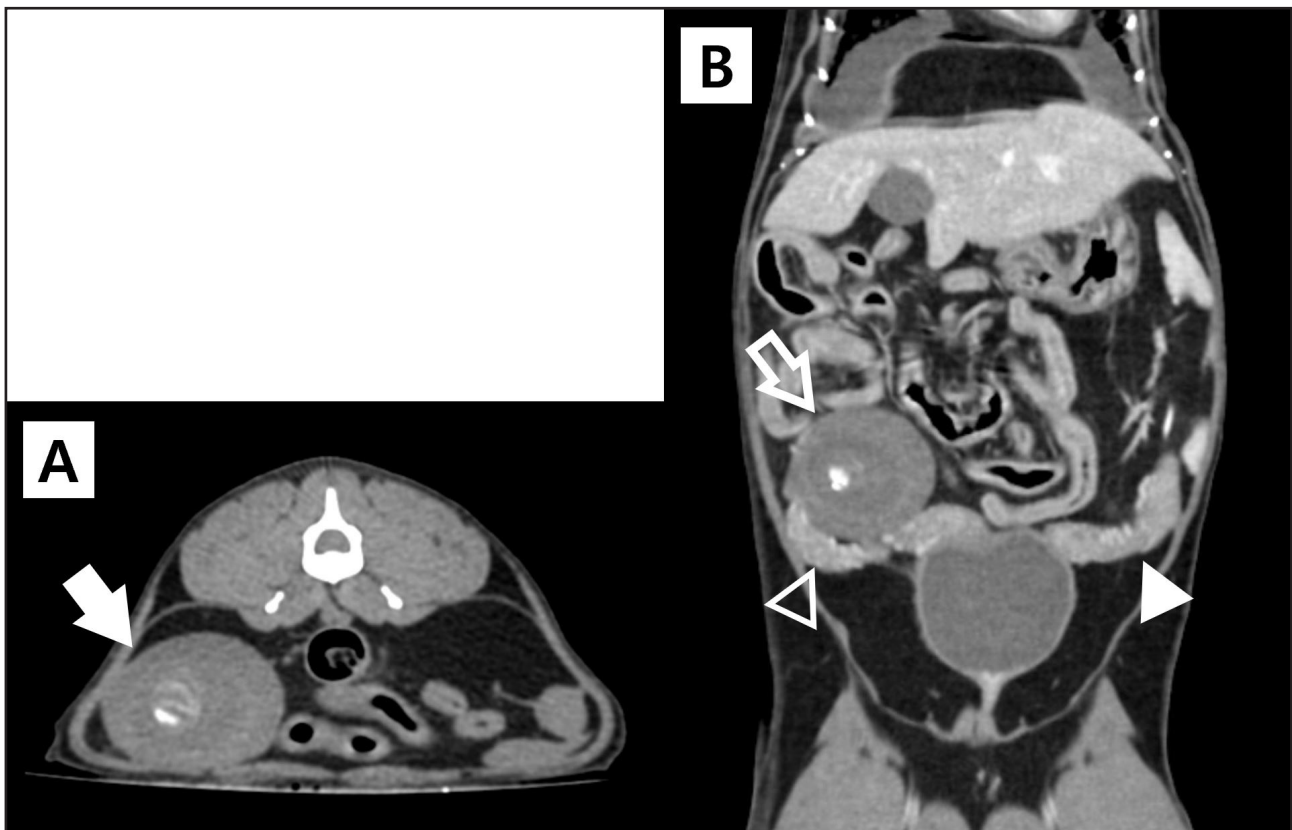


Figure 2. Computed tomography (CT) images of the uterine mass. A- The mass (arrow) containing hyperattenuated material is seen in the pre-contrast CT image. B- The mass (open arrow) seen at the proximal end of the right uterine horn in the post-contrast CT image. The right uterine horn (open arrowhead) and the left uterine horn (arrowhead) are thickened.

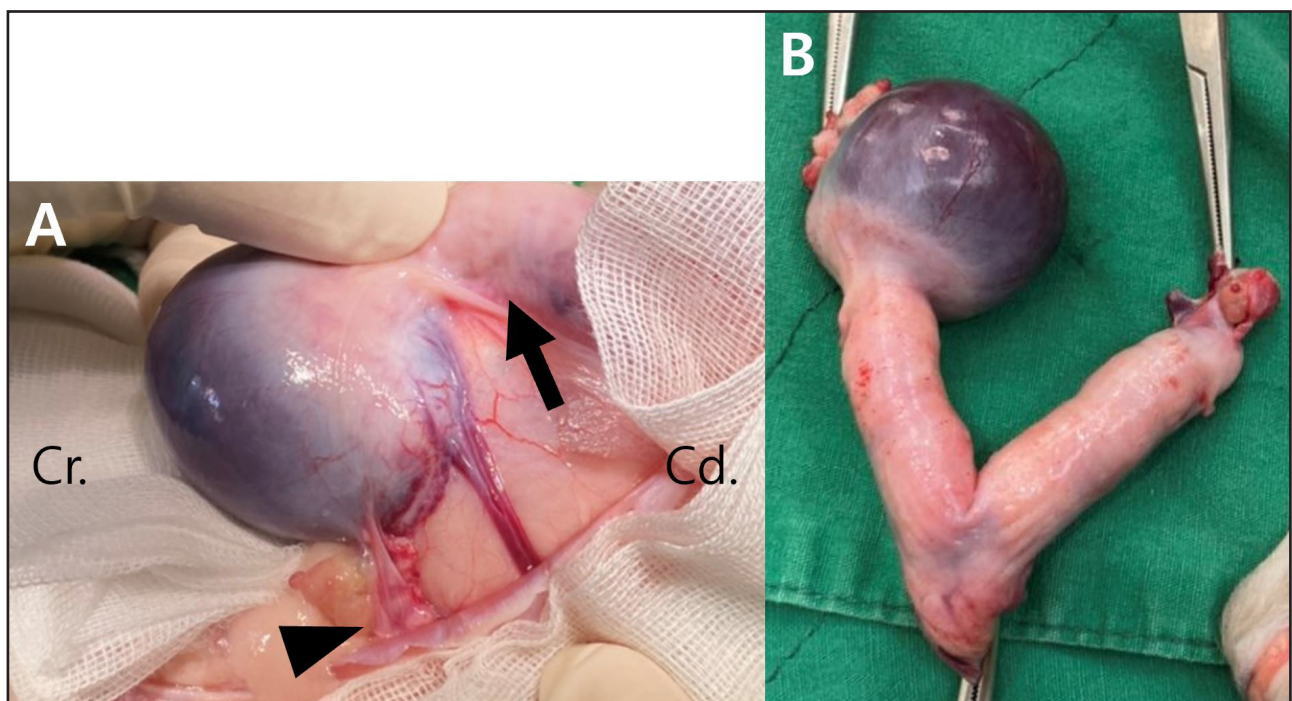


Figure 3. Intraoperative images. A- The mass was located between the proximal end of the right uterine horn (black arrow) and the right ovary (black arrowhead). B- Postoperative image showing the gross appearance of both the uterine horn and the uterine hematoma.

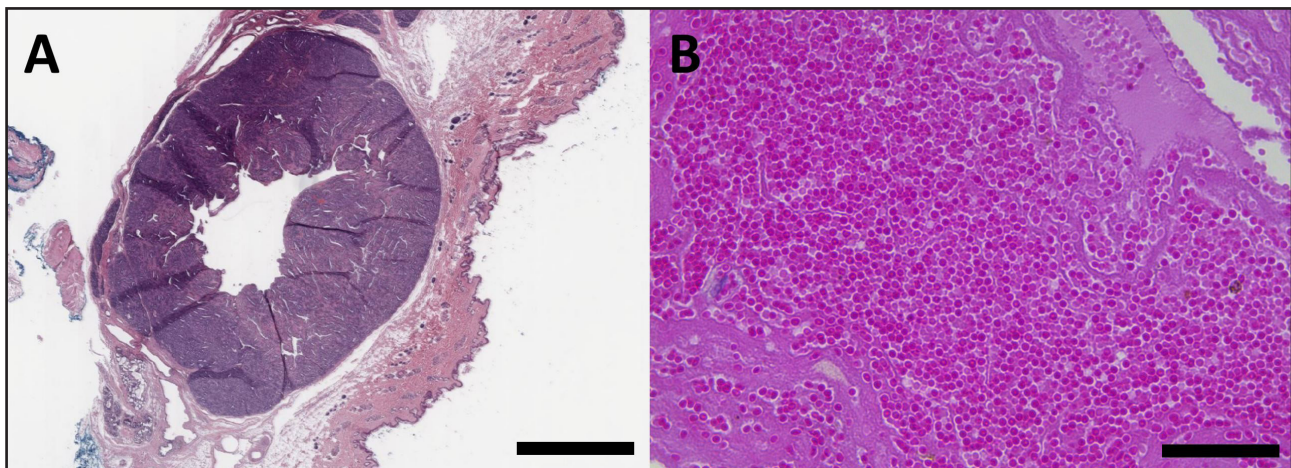


Figure 4. Histopathologic images. A- Mass of the mammary gland [H&E; Scale bar= 1,000 µm]. B- Uterine hematoma showing erythrocytes with fibrin [H&E; Scale bar= 50 µm].

DISCUSSION

In humans, uterine hematoma frequently complicates pregnancy, especially in the first trimester of gestation [13]. A large intramural uterine hematoma in association with iatrogenic damage sustained at termination of pregnancy has been also reported [11]. Its occurrence ranges from 0.46% to 39.5% [5,10]. Compared to humans, uterine hematoma is extremely rare in animals. There are only two reported cases of uterine hematoma, one in a dog and another in a mare. The exact etiology of uterine hematoma in animals is unclear [2,14]. However, considering that the hematoma is caused by hemorrhage in tissues [2], it is logical to assume that uterine hematoma is highly associated with uterine hemorrhage associated with the estrus cycle and cystic endometrial hyperplasia-pyometra complex induced by progesterone [1]. However, we found no histologic findings of cystic endometrial hyperplasia or pyometra in the case reported here. Moreover, according to the owner report, the cat in the case reported here, had not been treated with progesterone derivatives for suppression of estrus.

On the other hand, uterine wall hemorrhage in a mare was reportedly associated with iatrogenic trauma with an infusion pipette or a culture or uterine biopsy device [14]. In the case reported here, there were no findings suggestive of trauma, such as skin abrasions, swelling, or bruising. Additionally, the patient had no history of recent abdominal surgery. Considering remaining abdominal organs such as kidneys, liver, or intestines are grossly normal,

therefore, trauma was ruled out as a cause of the hematoma. Furthermore, as the APTT and PT were within the normal range, coagulation diseases were also excluded. According to a previous study, uterine hematoma can also occur in the peripartum period; however, the owners reported that the patient had never met any male cats.

Massive local extravasation of erythrocytes during a recent estrus cycle has been proposed as an etiology of uterine hematoma [2]. In the cat reported here, based on the history from the owner, blood examination findings (including those of coagulation panels), and gross appearance of both thickened uterine horns, extensive hemorrhage during the last estrus was suspected to be the cause of uterine hematoma. However, the exact etiology remains unclear.

Clinical signs include abdominal distension with tension, increased water uptake, and decreased appetite for two weeks according to the previous case reported in a dog [2]. In another case reported in a mare, the uterine hematoma was incidentally found during reproductive evaluation [12]. In the current case reported here, the cat appealed pain on palpation of the right mid-abdomen. According to the previous literature, lethargy or anorexia could be result from paraneoplastic syndrome in association with hypercalcemia [6]. However, considering calcium concentration within normal range at the time of presentation, clinical signs such as anorexia or lethargy in the current case is assumed to result from pain rather than paraneoplastic syndrome.

The recommended treatment for the uterine hematoma is OHE in veterinary medicine [2,12]. Although the number of cases is limited, according to the previous study, the metastasis of the mammary gland tumor to the inguinal lymph nodes, uterus, lungs, heart, muscle, or urinary bladder has been reported [3,9]. In the case reported here, since the skin mass was identified between the 3rd and 4th mammary gland in the right caudal abdomen in addition to the mass within the right uterine horn, metastasis was not completely ruled out. Therefore, the right unilateral mastectomy was performed in addition to the OHE with the informed consent of the owner. However, since the mammary gland tumor was identified as benign ductular adenoma by histopathologic evaluation, the uterine lesion was assumed to be unrelated to the mammary gland tumor.

A limitation of this study is that the patient died a week after surgery due to acute renal failure. Given the preoperative ultrasonographic findings of senile changes in both kidneys, the patient is assumed to have

underlying chronic kidney disease that contributed to her death. However, the OHE for the management of uterine hematoma has been reported to be associated with a good prognosis [2,12].

In conclusion, since this is the first case report describing spontaneous hematoma in the uterus, the hematoma should be considered as a differential diagnosis of any uterine mass. Moreover, since CT findings of uterine hematoma has not been reported so far, this could be helpful for diagnosis of uterine hematoma in veterinary medicine.

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Declaration of interest. The authors report no conflicts of interest. The authors alone are responsible for the content and writing of paper.

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