UTERINE HEMATOMA IN A DOG

Uterus hematoom bij een hond

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ABSTRACT

A large intra-abdominal mass with several cavities was detected by ultrasound in a nine-year-old apathic female German Shepherd with a very tense belly. At surgery, a fluctuating mass was found in the middle of the left uterine horn. Neoplasia was suspected and the mass was surgically removed. Histologically, a diagnosis of organizing hematoma was made.

SAMENVATTING

Bij een 9 jaar oude apathische Duitse Herder teef met een erg gespannen buik werd echografisch een grote intra-abdominale massa met verscheidene tussenschotten vastgesteld. Een licht fluctuerende massa met tumoraal uitzicht, gelokaliseerd in het midden van de linker uterushoorn werd chirurgisch verwijderd. Histologisch werd het letsel als een organiserend hematoom van de uterushoorn gekarakteriseerd.

INTRODUCTION

Tumor-like enlargements produced by hemorrhages in tissues are usually classified as hematomas (Jones *et al.*, 1997). In animals, uterine hematomas are rarely described in the literature. Only one case report in a mare has ever been published (Shideler *et al.*, 1990). The exact etiology is almost impossible to determine. In humans, uterine hematomas have been correlated with abortion and premature delivery (Glavind *et al.*, 1991). In animals, uterine hemorrhages are associated with estrus (McEntee,1990). Marked edema and marked hyperemia occur in the lamina propria of the canine uterus by the first day of proestrus (McEntee, 1990). Uterine hemorrhages are also associated with subinvolution of placental sites and progesterone induced cystic endometrial hyperplasia-pyometra complex in the bitch (McEntee, 1990).

CASE HISTORY

An apathetic, nine-year-old German Shepherd bitch was presented with a very tense and enlarged abdomen. Previously, the owner had observed increased water intake and decreased appetite over a period of two weeks. At the age of four this bitch had given birth to seven puppies. The animal had never been treated with progesterone derivatives to suppress estrus. The last estrus had occurred about one month before presentation.

General physical examination revealed normal temperature, increased respiration and pulse frequency, anemic mucosal membranes, reduced skin turgor and normal lymph nodes. Ultrasound showed a very large intra-abdominal honeycomb-like mass. Thoracic radiography revealed no abnormalities. The following abnormalities were noted in hematology: decreased hematocrite (19.8%; normal value: 37 - 55%), decreased hemoglobin concentration (6.7 g/dl; normal value: 12 – 18 g/dl) and increased numbers of white blood cells (51.5 x 10^9/l; normal value: 6 – 16.9 x 10^9/l). The majority of the white blood cells were neutrophils (90%). Serum biochemistry was normal. As neoplasia was suspected, explorative laparatomy was performed under general anesthesia. The dog was premedicated with Domitor (medetomidine - Pfizer)

and Anesketin (ketamine - Eurovet). Anesthesia was induced with Nembutal (Natriumpentobarbital - Sanofi) and maintained with Fluothane (halothane - Zeneca). Surgical monitoring included capnography, pulse-oxymetry and ECG. No abnormalities were observed during anesthesia. Surgery revealed a large reddish mass occupying the larger part of the abdominal cavity. The mass was situated in the left uterine horn, which showed a torsion of about 360°. Ovariohysterectomy was performed. The uterine mass weighed 5.3 kg and was about 25 cm in diameter. Inspection of the abdominal cavity revealed no other abnormalities.

Recovery of the bitch was uneventful. The dog was in good condition when examined 2 months later.

Macroscopic examination of the fluctuating uterine mass revealed a thin-walled encapsulated hematoma with large honeycomb-like fibrinous structures. The hematoma occupied half of the uterine horn (Fig. 1). The remaining part of the lumen of the affected uterine horn was filled with blood. A sample of the normal right uterine horn and one from a normal segment of the left uterine horn, as well as two samples of the hematoma, were collected and fixed in a 4 % formaldehyde solution, paraffin embedded and sectioned at 5 micrometers for histological examination. The sections were stained with hematoxylin and eosin (HE). The hematoma almost completely consisted of spaces filled with plasma, erythrocytes and white blood cells, outlined by fibrin and young fibroblast proliferations (Fig. 2), giving it a honeycomb-like appearance on ultrasound and macroscopic examination. Multifocally small blood vessels were observed. Within the mass, multiple linear and circular epithelial nests were noted. These cells were cuboidal to cylindrical with a large amount of foamy cytoplasm and a dark staining around the nucleus. They were most likely remnants of endometrial glands (Fig. 3). Periodic Acid Shiff positive material was observed, outlined by these presumed endometrial gland cells.

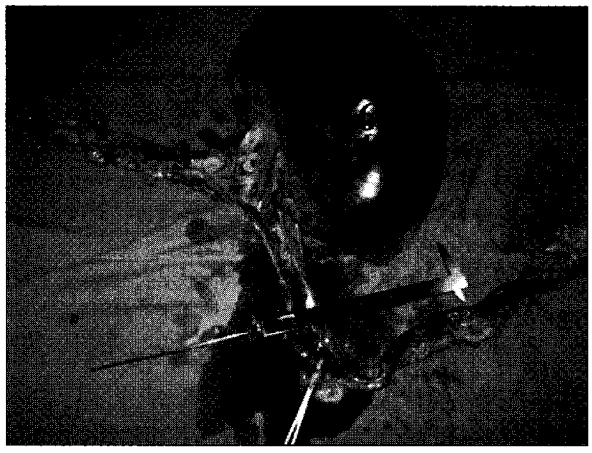

Figure 1. Macrophotograph of female reproductive tract with uterine hematoma.
1: ovarium / 2: ovarium / 3: uterine horn / 4: uterine horn / 5: cervix and corpus uteri / 6: uterine hematoma.

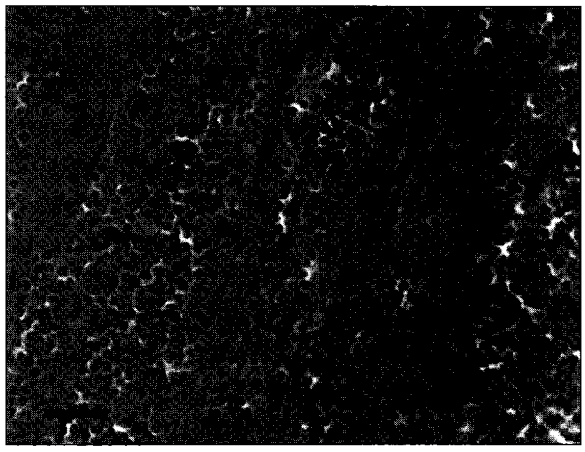

Figure 2. Microphotograph of uterine hematoma showing fibroblast proliferation.
1: erythrocytes of hematoma / 2: fibroblasts and collagen fibers.
Bar = 25 µm

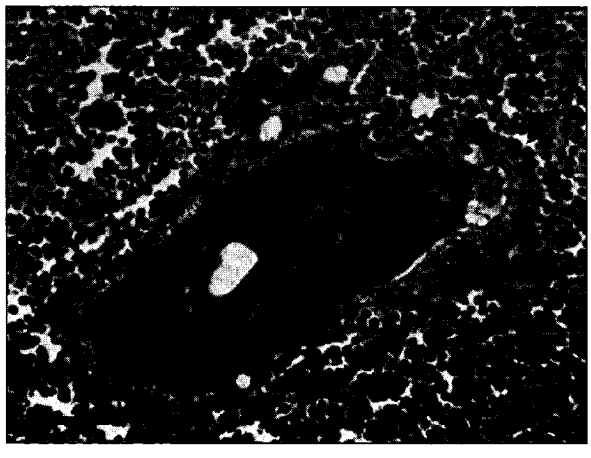

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Figure 3. Microphotograph of uterine hematoma with remnants of endometrial glands.
1: erythrocytes and fibrin / 2: cylindrical to cuboidal endometrial cells / 3: endometrial gland lumen filled with mucus.
Bar = 25 µm

The hematoma was outlined by the uterine wall. The edematous uterine wall consisted of the longitudinal and circular muscular layer of the myometrium with multiple vibices. The thin remaining endometrium of the uterine wall consisted almost completely of fibrin, vibices and small remnants of the endometrial stroma and some epithelial nests with a linear or circular organization. Histologically the normal uterine horn showed metestrus. The epithelial cells of the surface epithelium and many endometrial glands had a high cylindrical appearance with a large amount of granular eosinophilic cytoplasm. However, the endometrium/ myometrium ratio was reduced to 1/3, especially due to atrophy of the endometrium. The uterine lumen of the non-affected horn was also filled with blood.

DISCUSSION

Since epithelial remnants and PAS positive secretions were observed in the hematoma, the onset of the hematoma occurred somewhere in the uterine wall, probably in the endometrium. Uterine hemorrhages in the bitch are associated with estrus and progesterone induced cystic endometrial hyperplasia-pyometra complex (especially pyometra) (McEntee, 1990). But in the present case, estrus occurred about one month before presentation and this bitch had never been treated with progesterone derivatives to suppress estrus, nor had it showed any histological signs of cystic endometrial hyperplasia or pyometra in the uterus.

In horses, it has been assumed that uterine wall hemorrhage can be caused iatrogenically with an infusion pipette, culture or uterine biopsy instrument (Shideler *et al.*, 1990). But in the present case no such interventions took place. Another possibility is that the hematoma occurred in the peripartum period (Shideler *et al.*, 1990). However, the last time this bitch was pregnant was 5 years before the onset of this uterine hematoma.

The precise etiology of this uterine hematoma remains undetermined. A possible factor in the ontogeny of this uterine hematoma may have been extensive local extravasation of erythrocytes during the last estrus. Focal areas of extravasation of erythrocytes occur in the subepithelial connective tissue during estrus (Evans and Cole, 1931). However, Evans and Cole (1931) prepared serial sections of the areas of extravasation without finding any break in the continuity of the epithelium, suggesting that the bleeding points are either very few in number or very minute. Another possibility is abdominal trauma, but in that case it is likely that other abdominal organs (liver, kidneys, intestines) would have been traumatized as well.

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