



GIANT MUCOMETRA IN A GOLDEN RETRIEVER BITCH: A CASE REPORT

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| <p>Article Info <i>Received 21/01/2016</i> <i>Revised 30/01/2016</i> <i>Accepted 02/02/2016</i></p> <p>Key words: Mucometra, Pyometra, Cystic endometrial hyperplasia, Uterus, bitch.</p> | <p>ABSTRACT Mucometra, literally meaning presence of seromucous intrauterine fluid, is a rare disease of intact bitches, similar to pyometra. Although it is usually not a life-threatening condition, it has a particular importance for every veterinary practitioner. The aim of the present report was to describe a clinical case of mucometra in a Golden Retriever bitch with a large amount of uterine fluid, which was developed after the administration of exogenous progesterone for estrus suppression.</p> |
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INTRODUCTION

Mucometra is an accumulation of sterile intraluminal mucoid fluid, which has not any significant systemic outward clinical signs [1]. The disease is thought to occur with cystic endometrial hyperplasia (CEH) and the character of the intrauterine fluid is classically sterile and seromucous [2], which differs it from pyometra, where the fluid is contaminated with bacteria. Another difference between the two illnesses is that pyometra causes varying degrees of systemic disease, but mucometra typically does not cause obvious clinical signs. Both of the conditions cause uterine enlargement due to fluid filling [3].

Diagnosing pyometra and differentiating open-cervix pyometra from mucometra is possible by cytologic examination of vulvar discharge. With pyometra large number of degenerative neutrophils and intra- or extracellular bacteria may be seen, while with mucometra there are lesser number of neutrophils and also erythrocytes, endometrial cells and varying amounts of debris [1]. The diagnosis of pyometra and mucometra are best made by ultrasonography [4]. Pyometra is

characterized by enlarged uterus with convoluted, tubular horns filled with hypoechoic fluid [5, 6], while mucometra is suspected if uterine luminal content is echodence [7].

The aim of the report was to present a case of life-threatening mucometra in a Golden Retriever bitch, developed after the administration of exogenous progesterone for estrus suppression.

CASE HYSTORY

A 3-years-old Golden Retriever bitch, 34.7 kg in weigh, was referred for examination at the Small Animal Clinic of the Faculty of Veterinary Medicine, Trakia University in Stara Zagora. The owner reported that the bitch had given a birth of 5 live puppies a year ago and after that it was treated subcutaneously with 50 mg medroxyprogesteron acetate (Depo-Promone®, Pfizer Manufacturing Belgium NV, Medroxyprogesteron Acetate-50 mg/ml) twice for estrus suppression three and nine months ago, respectively. The animal was presented to the clinic because of progressive abdominal enlargement



in the last two months (Figure 1).

On physical examination, there were no changes in the general condition of the animal. Rectal body temperature; 38.4 °C, heart rate; 87 min⁻¹, respiratory rate; 25 min⁻¹. The appetite was preserved and the colour of visible mucosa coats was rose-red. The abdomen was very enlarged, hard and slightly painful upon palpation.

Abdominal ultrasonography was done by ultrasound scanner Mindray DC-6 Vet (Mindray, China), 6.5 MHz transducer and printer Mitsubishi P91 E. The uterus was enlarged, filled with homogenous hypoechoic fluid and thickened wall. (Figure 2).

The hematology and biochemical parameters were determined on an automated hematological analyzer BC-2800 Vet (Mindray, China) and biochemical analyzer BA 88 (Mindray, China), respectively. According to the hemogram and blood biochemistry results all the parameters were in normal ranges (Table 1).

The bitch was diagnosed as mucometra by the results of ultrasonography and absence of any systemic outward clinical signs. The owner wanted to preserve the breeding value of the bitch and medical treatment to be tried.

In order to prevent progesterone effects and to promote cervical relaxation the patient was treated subcutaneously with 10 mg/kg (0,33 ml/kg m) body weight aglepristone (Alizine®, Virbac Laboratories, Carros, France, aglepristone-30 mg/ml) twice with a 24 hours interval.

Preventing possible bacterial infection a broad-spectrum antibiotic (Shotapen®, Virbac Laboratories, Carros, France, 1ml/10kg) was applied subcutaneously five times in a three days interval.

On the fourth day after the beginning of the treatment seromucous vaginal discharge appeared (FIGURE 3), and 0,1 mg/kg m dinoprost thromethamide (Dinolytic®, Pfizer Manufacturing Belgium NV, dinoprost thromethamide-5 mg/ml) was applied in order to induce uterine contractions and expulsion of the intraluminal

content. On the next three days the patient received 0,2 mg/kg m dinoprost thromethamide.

Eight days after the first aglepristone treatment there was significant reduction of the body weight (25.0 kg) of the bitch but the ultrasound examination revealed that the uterus was still filled with homogenous hypoechoic fluid (Figure 4).

It was concluded that the medical therapy is not effective and surgical treatment was performed. After aseptic operation site preparation, the premedication was done by 0.04 mg/kg atropine sulphate (Atropinum sulfuricum; Sopharma; Bulgaria) subcutaneously. Fifteen minutes later anaesthesia was induced by intravenous injection of 0.4 mg/kg diazepam (Diazepam; Sopharma; Bulgaria) and 10 mg/kg ketamine (Ketaminol 10; Intervet; Holland). After endotracheal intubation, general anaesthesia was maintained with isoflurane (Forane; Abbott Laboratories Ltd; United Kingdom).

The operative approach included caudal median laparotomy. The inspection showed no pathological fluid within the abdominal cavity, or any alterations of the peritoneum and the other visceral organs. The uterus was very large and the ovaries were almost not palpable (Figure 5). On the basis of these findings, ovariohysterectomy was performed. The abdomen was washed twice with sterile saline and closed with interrupted No1 absorbable polyglycolic acid sutures (Marlin; Catgut GmbH; Markneukirchen), and the skin was sutured with simple interrupted non-absorbable sutures No0 (Vitalon; Dr Hammer & Co. GmbH; Hamburg). The weight of the ovariohysterectomised uterus was 6.5 kg.

Post-operative treatment included 6-day antibiotic treatment with the broad-spectrum antibiotic (Shotapen®, Virbac Laboratories, Carros, France) in a three days interval and 3-day administration of non-steroidal anti-inflammatory drug - 2 mg/kg ketoprofen (Ketofen; Merial; Lion; France). A protective Elizabethan collar was placed. Skin sutures were removed eleven days later. The patient showed good recovery within two weeks.

Fig 1. The bitch on the first day of medical exam



Fig 2. Ultrasonogram of the bitch on the first day of treatment



Fig 3. Vaginal fluid from the bitch



Fig 4. Ultrasonogram of the bitch on the eight day after the start of treatment



Fig 5. The uterus during the ovariohysterectomy



Table 1. Hematology and blood biochemistry parameters of the patient

| Hematology Parameter | Result | Reference Values [8] | Biochemistry Parameter | Result | Reference Values [9] |
|----------------------|--------|----------------------|------------------------|--------|----------------------|
| HGB (G/L) | 132 | 120-180 | ASAT (U/l) | 37 | 23-66 |
| HCT (%) | 37.1 | 37-55 | ALAT (U/l) | 40 | 21-102 |
| RBC (T/l) | 5.79 | 5.5-8.5 | Urea (mmol/l) | 3.3 | 1.67-3.33 |
| MCV (fl) | 63.3 | 60-77 | Creatinine (µmol/l) | 88 | 44.2-132.6 |
| PLT (G/l) | 280 | 200-500 | - | - | - |
| WBC (G/l) | 12.2 | 6.0-17.0 | - | - | - |

Legend: HGB = hemoglobin; HCT = hematocrit; RBC = red blood cells; MCV = mean corpuscular volume; PLT = platelets; WBC = white blood cells

DISCUSSION

Although the true incidence of mucometra in the bitch is unknown [1], Fransson *et al.* [10] reported that this condition is diagnosed in 5% of the dogs with uterine pathological changes. In our case we found mucometra by ultrasound which is in accordance with other researchers [1], who claimed that this disease is an incidental finding during ultrasound examination of the reproductive system or ovariohysterectomy.

Although some authors found no significant risk [12, 13], others [14] affirmed that hormonal treatment with progesterone for estrus suppression may explain

development of uterine pathology with accumulation of intraluminal hypoechoic fluid.

According to us mucometra accompanied with congestion of such a huge amount of uterine fluid was a result of previously received medroxyprogesteron acetate. Progesterone increases the secretory activity of the endometrial glands, decreases the contractility of the myometrium and causes functional closure of the cervix. These are the predisposing factors for accumulation of fluid in the uterine lumen and subsequent development of mucometra in the bitch [11].

Occasionally the size of the uterus and its fluid filling is inversely proportional to the degree of cervical

patency [3]. Although the induced medical promotion of cervical relaxation, the expulsion of uterine fluid was partial and the conservative treatment was unsuccessful. This might be explained by the overstretched uterine wall and lack of adequate myometrial contractions. On the other hand the poor treatment response might be result of the partial effect of progesterone-receptor antagonist aglepristone due to previous exogenous progestin treatment.

The condition of our patient was more dangerous than usual because of the risk of rupture of the uterine wall and the consequent peritonitis. Summarizing the expelled fluids and the uterus after ovariohysterectomy we found that it was almost 47% of the body weight of the patient at the first day of medical exam. It is the first report of mucometra accompanied with accumulation of such a large amount of intraluminal uterine fluid in the bitch.

REFERENCES

1. Pretzer S. (2008). Clinical presentation of canine pyometra and mucometra: a review. *Theriogenology*, 70, 359-363.
2. Sandholm M, Vasenius H, Kivisto AK. (1975). Pathogenesis of canine pyometra. *J Am Vet Med Assoc*, 167, 1006-1010.
3. Dow C. (1957). The cystic hyperplasia-pyometra complex in the bitch. *Vet Rec*, 69, 1409-1415.
4. Bigliardi E, Prmigliani E, Cavirani S, Luppi A, Bonati L, Corradi A. (2004). Ultrasonography and cystic hyperplasia-pyometra complex in the bitch. *Reprod Domest Anim*, 39, 136-140.
5. Voges AK, Neuwirth L. (1996). Ultrasound diagnosis-cystic uterine hyperplasia. *Vet Radiol Ultrasound*, 37, 131-132.
6. Fayrer-Hosken RA, Mahaffey M, Miller-Liebl D, Candle AB. (1991). Early diagnosis of canine pyometra using ultrasonography. *Vet Radiol*, 32, 287-289.
7. Van Haaften B, Taverne MAM. (1989). Sonographic diagnosis of a mucometra in a cat. *Vet Rec*, 124, 346-347.
8. Weiss D, Wardrop K. (2010). Schalm's veterinary haematology, 6th ed. Iowa: Blackwell Publishing, 801.
9. Kaneko J, Harvey J, Bruss M. (2008). Clinical biochemistry of domestic animals, 6th ed. Oxford, Elsevier Academic Press, 889-895.
10. Fransson B, Lagerstedt AS, Hellmen E, Jonsson P. (1997). Bacteriological findings, blood chemistry profile and plasma endotoxin levels in bitches with pyometra or other uterine diseases. *J Vet Med Ser A*, 44, 417-426.
11. Johnson ME. (1984). Hydrometra in the dog: A case report. *J Am Anim Hosp Assoc*, 20, 243-245.
12. Niskanen M, Thrusfield M. (1998). Association between age, parity, hormonal therapy and breed, and pyometra in Finnish dogs. *The Veterinary Record*, 43, 493-498.
13. Antonov A, Atanasov A, Fasulkov I, Georgiev P, Yotov S, Karadaev M, Vasilev N. (2014). Influence of some factors on the incidence of pyometra in the bitch. *Bulgarian Journal of Veterinary Medicine*, 18 (4), 367-372.
14. Baithalu RK, Maharana BR, Sarangi C, Samal L. (2010). Canine pyometra. *Veterinary world*, 3 (3) 340-342.

CONCLUSION

Mucometra should be considered in any intact bitch when the uterus is filled with a sterile and seromucous fluid, which is ultrasonographically hypoechoic and there are no systemic clinical signs or increase of neutrophils in the blood.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

STATEMENT OF HUMAN AND ANIMAL RIGHTS

All procedures performed in human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

