https://doi.org/10.21708/avb.2025.19.1.12651

CASE REPORT

ACTA VETERINARIA BRASILICA

ISSN: 1981-5484

Open pyometra in a young female dog

Piometra aberta em cadela jovem

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ABSTRACT: Pyometra is one of the most common pathologies affecting the reproductive system of females, including canines. This condition is characterized by mucopurulent secretion in the uterine lumen and can be classified into open- and closed-cervix pyometra. This pathology is often seen in middle-aged to elderly female dogs because of increased exposure to progesterone and in animals subjected to the use of exogenous progestogens. The most common clinical signs are mucopurulent or bloody discharge from the vulva, swollen vulva, fever, vomiting, anorexia, lethargy, polyuria, polydipsia, weight loss, and prostration. Pyometra may result in uterine enlargement, torsion, rupture, and septicemia. This report describes the case of a young female dog with open pyometra, which was 1 year and 22 days old and had not been exposed to exogenous progestogens. This fact highlights the need to understand the pathology as timely diagnosis aids in rapid and effective treatment.

Keywords: cervix; pyometra; progesterone; female reproductive system; septicemia.

RESUMO: A piometra é uma das patologias que mais acomete o sistema reprodutivo das fêmeas, incluindo as cadelas. É caracterizada pela presença de secreção mucopurulenta no lúmen uterino e pode ser classificada como de cérvix aberta ou fechada. Ocorrendo com maior frequência cadelas de meia idade a idosas, devido a maior exposição à progesterona, ou animais que foram submetidos ao uso de progestágenos exógenos. Os sinais clínicos mais frequentes são secreção mucopurulenta ou sanguinolenta saindo pela vulva, vulva edemaciada, febre, êmese, anorexia, letargia, poliúria, polidipsia, perda de peso e prostração. Como consequência da piometrite pode-se citar dilatação uterina, torção, ruptura e septicemia. O presente relato tem como objetivo realizar uma breve revisão bibliográfica sobre piometra em animais de companhia, e em seguida relatar o caso de uma cadela jovem com piometra aberta. Visto que se trata de um animal com um ano e vinte e dois dias e que não foi exposto ao uso de progestágenos exógenos. Fato que corrobora com a importância do conhecimento da patologia. Pois, a agilidade na identificação da afecção auxilia em um tratamento rápido e eficaz ao paciente.

Palavras-chave: cérvix; piometrite; progesterona; reprodutor feminino; septicemia.

INTRODUCTION

Pyometra, also called pyometritis, is one of the most common conditions affecting the reproductive tract of female dogs (Silva *et al.*, 2022). This condition is characterized by the accumulation of purulent secretion in the uterine lumen and can be classified into open- and closed-cervix pyometra (Oliveira, 2015).

Pyometra is linked to the influence of progesterone and is most commonly observed during the diestrus phase and in patients who have received hormone injections. **Escherichia coli** is one of the most common bacteria isolated from the uterus. This organism releases endotoxins that are responsible for many of the clinical signs (Macphail, 2015). Progesterone increases the activity of endometrial glands and decreases myometrial contractility, which facilitates the development of pyometra in the patient (Patil *et al.*, 2016). In felines, as the levels of this hormone are significantly increased only after copulation, they are less frequently affected (Silva, 2020), unlike canines, which experience significant hormone surge during diestrus, which predisposes them to the condition (Macphail, 2015).

Pyometra can result in complications such as uterine enlargement, torsion, rupture, and septicemia (Jagnow *et al.*, 2021; Silva *et al.*, 2022). The clinical signs of pyometra include mucopurulent or bloody discharge from the vulva, anorexia, lethargy, vomiting, polyuria, polydipsia, weight loss, prostration, and fever (Macphail, 2015). The severity of the condition varies according to the clinical signs and the type of pyometra, with closed-cervix pyometra being more severe, potentially leading to rapid septicemia and death, which makes it a medical emergency (Silva *et al.*, 2022).

The diagnosis of pyometra is based on a combination of the patient's history and clinical signs and is confirmed via information obtained from anamnesis, physical examination, blood count, biochemical tests, and imaging (Trautwein *et al.*, 2017). Other conditions that present similar clinical signs, such as vaginitis, pregnancy, renal insufficiency, hyperadrenocorticism, and diabetes mellitus, should be considered as differential diagnoses (Silva *et al.*, 2022; Patil *et al.*, 2016).

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Received: 08/26/2024

Accepted: 09/16/2024

This paper describes the case of a young female dog with pyometra.

CASE REPORT

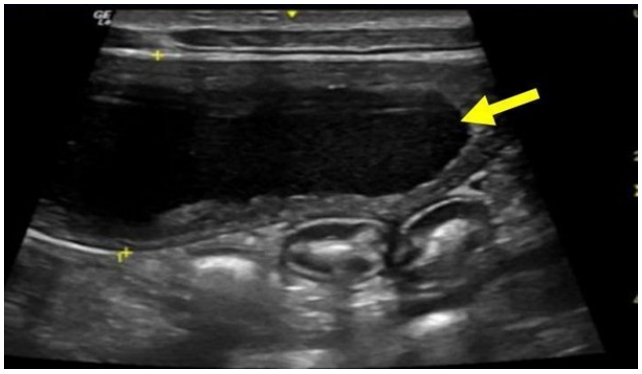
A female American Bully dog, aged 1 year and 22 days, weighing 20.50 kg, was brought to the clinic for a routine examination and was suspected to have pyometra. The owner reported that the dog had been adopted 30 days ago in a state of cachexia. The patient had a history of being a breeding dog at a reproduction kennel, where she had already undergone a cesarean section. Anamnesis revealed that the dog was up to date with deworming and vaccinations, eating well, active, with normal urination and defecation. The primary complaint that prompted the owners to seek medical attention was the presence of purulent discharge from the vulva.

On physical examination, the vulva was swollen with purulent discharge, but no other abnormalities were detected. A blood test was requested to determine the complete blood count and the levels of alanine aminotransferase, creatinine, urea, glucose, and alkaline phosphatase. Moreover, an imaging exam, specifically abdominal ultrasonography, was requested.

The blood test indicated leukocytosis and neutrophilia with a left shift, with a total leukocyte count of 29,800/mm^3, 596 band neutrophils, and an increased alkaline phosphatase level of 245.0 IU/L. The remaining blood parameters were within normal limits.

Abdominal ultrasonography showed an abnormality in the uterus, which was enlarged and had an internal anechoic content (Figure 1), with preserved walls and echogenicity. The iliac lymph nodes were enlarged (Figure 2).

Figure 1 – Ultrasound showing uterine enlargement with the presence of internal anechoic content (arrow).

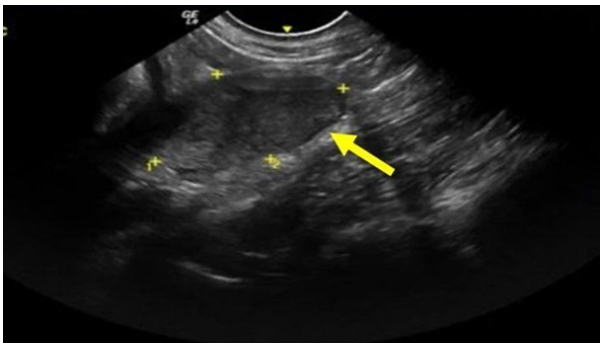


Source: M. V. João Souza, 2023 (courtesy).

Based on blood test findings, clinical signs, and imaging results, the diagnosis of pyometra was confirmed. Once the clinical suspicion was confirmed, a surgical request for therapeutic ovariosalpingohysterectomy was made.

The procedure was scheduled for the following day, with the patient fasting for 8 h. On the day of the procedure, preparation of the animal was initiated, which included trichotomy and antisepsis of the abdominal region while in dorsal recumbency. The pre-anesthetic medications were dexmedetomidine 1 µg/kg, IM, and methadone 0.2 mg/kg, IM, ketamine 2 mg/kg, IV, and propofol 2 mg/kg, IV, which were administered for induction, and during the surgery, fentanyl 2.5 mg/kg, IV, and isoflurane via inhalation were used.

Figure 2 – Ultrasound showing enlargement of the iliac lymph node (arrow).



Source: M. V. João Souza, 2023 (courtesy).

The surgeon performed a mid-ventral pre-umbilical celiotomy using a number 24 scalpel blade. During the procedure, the uterus, which was enlarged, was located and isolated. The suspensory ligament was ruptured, and the three-clamp technique was used on the ovarian pedicle for simple ligation to interrupt vascularization, performed bilaterally, with absorbable polyglycolic acid suture size 0. The procedure was continued, and the three-clamp technique was performed at the cervix, with two sutures—one simple and the other transfixing—using absorbable polyglycolic acid suture size 0. Subsequently, the area below the simple ligature was incised, and the organ was removed (Figure 3). Before completing the procedure, omentopexy was performed at the cervix. All materials were replaced, and the muscle, subcutis, and skin were closed with simple sutures using nonabsorbable nylon 3-0, thus completing the laparorrhaphy.

Figure 3 – Total uterine excision.

Source: Author's collection.

Upon completing ovariosalpingohysterectomy, postoperative medications were administered, including ampicillin 10 mg/kg, IV, dipyrone (Dipyrone Ibasa 50%) ®, 30 mg/kg, IV, meloxicam (Maxicam 2%) ®, 0.1 mg/kg, SC, tramadol hydrochloride 4 mg/kg, SC, and ondansetron (Emedron)®, 0.5 mg/kg, IV. The patient remained hospitalized for 24 h, receiving intravenous fluid therapy with Ringer's lactate and maintaining stability without unexpected signs. The following day, the dog was discharged with a prescription for amoxicillin with clavulanate potassium (Agemoxi CL) ®, 12.5 mg/kg, PO, every 12 h (BID) for 7 days, dipyrone sodium 25 mg/kg, PO, every 8 h (TID) for 5 days, tramadol hydrochloride 2.5 mg/kg, PO, TID for 3 days,

and meloxicam 0.2 mg/kg, PO, every 24 h (SID) for 3 days. Additionally, it was recommended that the patient remain at rest with the surgical mesh, that the suture sites be cleaned daily with saline solution, and that the owner return after 10 days for a review and possible suture removal.

At the follow-up visit after 10 days, the patient was active and did not exhibit any unwanted clinical signs, and the surgical incision area had healed. The sutures were removed, and the animal was discharged.

DISCUSSION

The diagnosis of pyometra was based on clinical signs, laboratory tests, and imaging findings. Pyometra mainly affects middle-aged to older unspayed female dogs (Oliveira *et al*., 2016). Young animals rarely develop this condition, and when it occurs, it is usually associated with the use of exogenous progestogens (Peixoto *et al*., 2023). In the present case, the dog was unspayed but young and without a history of exogenous progestogen use. The animal's breeding conditions and the fact that the patient likely experienced at least two estrous cycles are likely to have contributed to the condition (Feliciano, 2022). Although ascending infections of the uterus may occur because of commensal bacteria from the vaginal canal and perineal region during estrus when the cervix is open (Nascimento *et al*., 2021), their occurrence in this age group is uncommon.

The most common clinical signs of pyometra are vaginal discharge, anorexia, lethargy, weight loss, prostration, polydipsia, polyuria, vomiting, fever, and diarrhea (Macphail, 2015). Closed-cervix pyometra is considered an emergency owing to the risk of sepsis and death (Silva *et al*., 2022) as it prevents the expulsion of the purulent content (Macphail, 2015). The reported patient exhibited clinical signs of an edematous vulva with the presence of discharge, but no other abnormalities were noted during the physical examination or history taking. As the dog presented with open pyometra, the disease was mild. In addition, the visible vulvar discharge aided in early diagnosis, which directly influenced the success of the treatment.

The test findings were important for confirming the diagnosis of pyometra. Blood count revealed the presence of leukocytosis, and alkaline phosphatase levels were elevated. Leukocytosis and neutrophilia with a left shift are linked to infections, and the increase in alkaline phosphatase may be associated with toxemia (Oliveira, 2015). The uterine changes observed in the ultrasound were due to the enlargement of the endometrial glands and decreased myometrial contractility. These changes led to uterine enlargement and created a favorable environment for the development of pyometra (Patil *et al.,* 2016).

Differential diagnoses must be considered, with pregnancy being the primary suspicion (Macphail, 2015). However, it was ruled out as the ultrasound showed no fetal presence. Vaginitis, a condition characterized by vulvar discharge (Nascente, 2015) but only affects the vaginal mucosa, was also eliminated.

Pyometra can be treated surgically with ovariosalpingohysterectomy or medically with progesterone antagonists, prostaglandins, and dopamine agonists in cases of animals with high reproductive value (Ros; Holst; Hagman, 2014). The therapeutic approach presented here is considered the most appropriate as medical treatment alone is unlikely to eliminate the bacterial infection (Leomi; Burgos, 2015).

The antibiotic used as a complement to the treatment is crucial; hence, it is recommended that culture and sensitivity testing of the intrauterine fluid be performed to guide its selection (Trautwein *et al.*, 2017). Although this was not done, the antibiotics used were effective against *E. coli*, the bacterium most commonly found in the uterine region. This appropriate antibiotic choice contributed to the successful resolution of the condition and the discharge of the patient (Macphail, 2015).

CONCLUSIONS

This case reports a young female dog diagnosed with open pyometra, which highlights the importance of not neglecting this condition in young patients with symptoms indicative of this pathology although it is uncommon in this age group. The fact that it was an open-cervix pyometra contributed to early diagnosis and favored the patient's prognosis.

Treatment with ovariosalpingohysterectomy was effective, resulting in the resolution of the pathology and clinical discharge.

ACKNOWLEDGMENTS

M.V. João Sousa – For kindly sharing the ultrasound images.

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