

Ovarian Torsion in a Primipara Female Dog in Brazil

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ABSTRACT

Background: Ovarian torsion is a condition which the ovary and the ovarian pedicle twist around the ovary suspensory ligament. No report regarding this condition was reported. The aim of the report was to describe a case of unilateral ovarian torsion in a 2-year-old primipara Golden Retriever dog.

Case: A 2-year-old female primipara Golden Retriever dog weighting was referred to the Veterinary Hospital, for purulent vaginal discharge evaluation. The dog was presenting anorexia, weight loss, and intermittent diarrhea and vomiting. A cesarean section was performed nine months before her presentation and the oestrus cycle was recorded six months after the cesarean section. Discomfort was observed during the palpation of the abdomen and purulent vaginal was observed. Vaginal swab was performed and followed by cytological examination. The ultrasonographic examination was consistent with pyometra. The ovariohysterectomy was performed and were observed torsion of the left ovary. The histopathological examination of the left ovary and uterus were consistent with ovary necrosis and pyometra. Ten days after surgery the vaginal discharge had resolved and the sutures were removed. Six months postoperatively the dog revealed no further abnormalities. Grossly, the left ovary had firm consistency, dark red surface and 8 cm diameter. The histopathology examination findings were consistent with a diagnosis of diffuse necrosis of left ovary due to ovarian torsion, and uterine suppurative inflammatory process - pyometra.

Discussion: Ovarian torsion is uncommon in small animals, but can be observed high incidence in pregnant female dogs than in non-pregnant ones. The 360° an asynchronous ovarian torsion described in the present case is also an unusual condition in primipara female dogs due to the smaller stretching of the ovary suspensory ligament. The ovarian torsion is considerate an emergency condition due to acute abdominal pain. The mild abdominal discomfort observed during the physical examination was associated to pyometra or to ovarian torsion. The histopathological findings as hemorrhage, edema and necrosis were associated to compromised arterial circulation and ovarian torsion in late stage. The size of the pregnant uterus and/or the pyometra has contributed to ovary torsion. The dog of the present report had pyometra and previous cesarean sections; and these conditions may have contributed to ovarian torsion. The condition was incidentally found during the ovariohysterectomy, and the ovarian torsion diagnosis was determinate through histopathological examination. Computed tomography and magnetic resonance image could be used to diagnose, furthermore, they were not conducted due to the high cost. The leukocytosis and red blood cells Rouleaux was associated with ovarian necrosis and pyometra. Ovariohysterectomy was the treatment of choice to pyometra and ovarian torsion, and the surgery was performed without ovarian torsion reversion to minimize the reperfusion lesions. Ovarian torsion is a rare event in dogs, and it was clinically diagnosed during the surgery. To the best of the authors' knowledge, this is the first report of ovarian torsion associate with pyometra in primipara female dogs in Brazil.

Keywords: dog, obstetric, ovary, pyometra complex, endometrium.

Descritores: cão, obstetrícia, ovário, complexo piometra, endométrio.

INTRODUCTION

Ovarian torsion is an uncommon condition in female dogs, and it occurs when the ovary and the ovarian pedicle twist around the ovary suspensory ligament [8]. In women's patients, the uterine and ovarian torsions have been associated with dystocia due to excessive agitation during parturition and hormonal hyperstimulation [4,7,15,20]. Female dogs are unlikely to have clinical signs of ovarian torsion unless they come associated with pyometra [8,12].

The ovarian torsion in primipara female dogs is considered an uncommon condition. Few reports about uterine horn and ovarian torsion have been published, but there is no report about unilateral ovarian torsion associated with pyometra in female dogs, so far. The aim of the present report is to describe the clinical signs, surgical treatment, histological findings and clinical outcome of a unilateral ovarian torsion case in a 2-year-old female primipara Golden Retriever bitch.

CASE

A 2-year-old female primipara non-pregnant Golden Retriever dog weighting 29 kg was referred to the Veterinary Hospital, São Paulo, Brazil, for purulent vaginal discharge evaluation. The condition was already going for approximately 10 days. The owner reported that the dog was presenting appetite reduction, lethargy, apathy, anorexia, weight loss, polydipsia, polyuria, and intermittent diarrhea and vomiting. A cesarean section was performed nine months before her presentation and she whelped four puppies. However, surgery findings were not available. The last oestrus cycle was recorded six months after the cesarean section, and the owner was certain that the dog had not have been mated.

Mild discomfort during the palpation of the right abdomen and purulent vaginal discharge were observed. Vaginal swab was performed and followed by cytological examination, and showed a large number of highly degenerated neutrophils and intracellular bacteria. Vaginal discharge bacteriological culture showed *Escherichia coli* and *Streptococcus* sp. and the antibiogram evidenced high sensibility to cephalixin.

The CBC disclosed leukocytosis ($24.6 \times 10^9/L$; reference range, $6 - 17 \times 10^9/L$) characterized by a mature neutrophilia ($20.3 \times 10^9/L$; reference range, $3 - 11.5 \times 10^9/L$). The blood smear showed Rouleaux formation of red blood cells (RBC). The

serum biochemistry presented low urea and low alanine aminotransferase (ALT) levels. Cystocentesis yielded urine without any alteration. Abdominal ultrasound showed enlarged uterus filled with hypoechogenic fluid compatible with pyometra. There were no alterations in other organs. The ovaries were not observed because there was gas in the abdominal cavity. Thoracic and abdominal radiographs were within normal limits.

An exploratory laparotomy was performed with permission of the owner. Intravenous fluid therapy was provided via a cephalic catheter with a balanced electrolyte solution of Hartmann's crystalloid fluid at a rate of $25 \text{ mL kg}^{-1} \text{ h}^{-1}$. The dog was premedicated with carprofen (ketofen[®])¹ 4.4 mg kg^{-1} subcutaneously; morphine (Morfina Labesfal[®])² 0.3 mg kg^{-1} subcutaneously; and acepromazine (Acepran[®])³ 0.05 mg kg^{-1} subcutaneously. Anesthesia was induced with propofol (Diprivan[®])⁴ 2.5 mg kg^{-1} intravenously. An endotracheal tube (n° 7) was placed, and anesthesia was maintained on a rebreathing circuit system with isoflurane (Furane[®])⁵ and oxygen.

The dog was placed in dorsal recumbency and the abdomen was opened via a ventral midline celiotomy. Exploratory laparotomy revealed the left ovary markedly enlarged with approximately 360° torsion around the long axis of vascular pedicle and suspensory ligament. The surface was dark red, and several adhesions were present (Figure 1). The both uterine horns and uterus body was hyperaemic, inflamed and contained a volume of light brown fluid. The right ovary had a normal appearance and position.

The adhesions on the left ovary were gently removed before ovarioectomy. Ovariohysterectomy was performed without ovarian de-rotation, to minimize the risk of reperfusion injury. The ovarian pedicles were clamped with 1/0 monofilament nylon (Ethilon[®])⁶ prior to their division. The uterus body pedicle was submitted to transfixation ligation with 1/0 monofilament nylon (Ethilon[®])⁶ prior to its division. Exploration of the remaining abdominal viscera was unremarkable. The abdominal cavity was lavaged with warm and sterile saline solution prior to closure. The abdominal muscles and subcutaneous tissue was closed with 2/0 monofilament nylon (Ethilon[®])⁶ in a simple interrupted pattern. The skin was closed with same pattern with 2/0 monofilament nylon (Ethilon[®])⁶. The uterus weighted 1.4 kg and excised organs were submitted for histopathology examination.

The uterus weighed 1.4 kg and excised organs were placed in formalin and submitted for histopathology examination H & E staining. The anesthetic recovery was uneventful and postoperative analgesia was provided with tramadol chlorhydrate (Tramal[®])⁷ 4 mg kg⁻¹ orally, TID, for four days; and meloxicam (Maxicam[®])⁸ 0.1 mg kg⁻¹ orally, SID, for five days. Postoperative antibiotic was provided by cefalexin (Cefex[®])⁹ 30 mg kg⁻¹ orally, BID, for 10 days, and Elizabethan collar (E-collar) was recommended for 15 days. Surgical wound was treated with rifamycin spray (Rifocina spray[®])¹⁰ BID during seven days. Recovery from surgery was uneventful, and the sutures were removed 10 days postoperatively and vaginal discharge had resolved. Subsequent telephone conversation with the owner at six months postoperatively revealed no further abnormalities.

Grossly, the left ovary had firm consistency, dark red surface and 8 cm diameter. The histopathology examination showed marked neutrophil infiltration, mild hemorrhage, marked edema and necrosis spots in the left ovary (Figure 2). The ovarian structure of the right ovary was normal. The endometrium showed marked edema and neutrophil infiltration (Figure 3). These findings were consistent with a diagnosis of diffuse necrosis of left ovary due to ovarian torsion, and uterine suppurative inflammatory process - pyometra.

DISCUSSION

Both uterine and ovarian torsions are uncommon in veterinary medicine, particularly in small animals [8,12,14]. Previous reports described ovary torsion in pregnant and non-pregnant female cats

[11,12,16,17]. Misumi *et al.* [14], Darvelid and Lindel-Forsberg [2] reported higher ovarian torsion incidence in pregnant female dogs than in non-pregnant ones. The report of Misumi *et al.* [14] showed the association between ovarian torsion and cystic endometrial hyperplasia/pyometra complex, as the present report.

The present report described an asynchronous ovarian torsion case of approximately 360°, although it is an unusual condition in primipara female dogs due to the smaller stretching of the ovary suspensory ligament [8]. The rotation degree is an important factor to decide the severity of torsion as well as the prognosis [17]. The present report was unusual, since the torsion occurred in a non-pregnant female dog with mild clinical signs of ovarian torsion and classical clinical signs of pyometra, despite the presence of the 360° ovarian torsion.

The ovarian torsion is treated as an emergency condition due to acute abdominal pain and because it is necessary assuring the viability of the affected ovary in human patients [13]. In the present case, a mild abdominal discomfort was observed during the physical examination; however, it was difficult saying whether it was caused by the pyometra or by the ovarian torsion.

Escherichia coli was the prevailing gram-negative bacteria in the vaginal secretion of female dogs diagnosed with pyometra [3], and it corroborated the findings in the present report. The histopathological findings have shown large numbers of neutrophils, as well as hemorrhage, edema and necrosis in the affected ovary. These findings have indicated compromised arterial circulation and ovarian torsion in late stage [8,10]. The ovarian torsion mechanism remains unknown. However, it may be associated

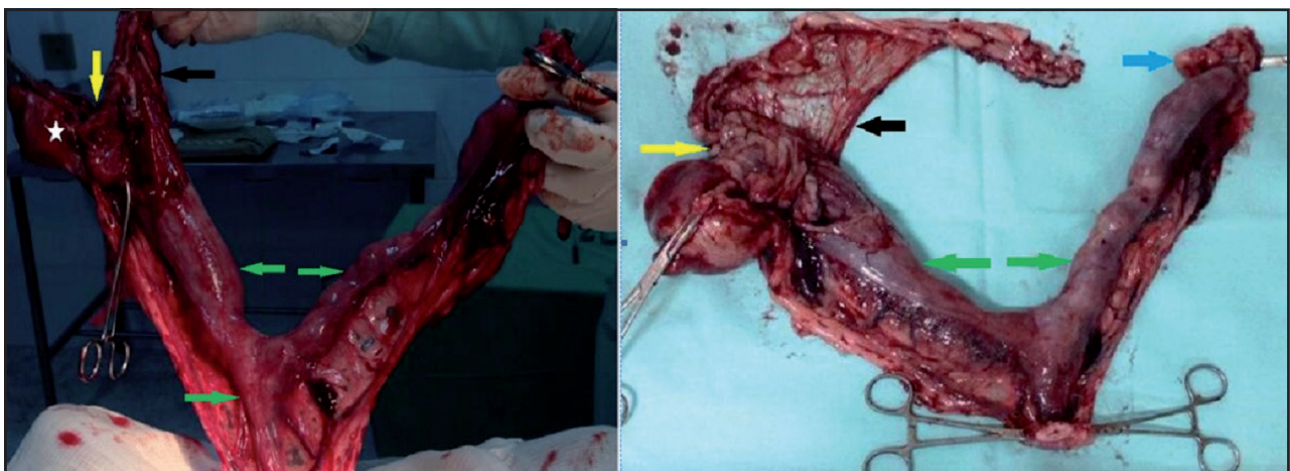


Figure 1. Intraoperative photograph during and after ovariectomy showing the left and right ovary and both uterine horn and body of uterus of a 2-year-old Golden Retriever female dog. Left ovary with dark red surface and markedly enlarged (*) with approximately 360° torsion around along the long axis of vascular pedicle and suspensory ligament (yellow arrow). Presence of several adhesions (black arrow). Both uterine horns and uterus body with hyperaemic appearance, inflamed and contained a volume of fluid (green arrow). The right ovary had a normal appearance and position (blue arrow).

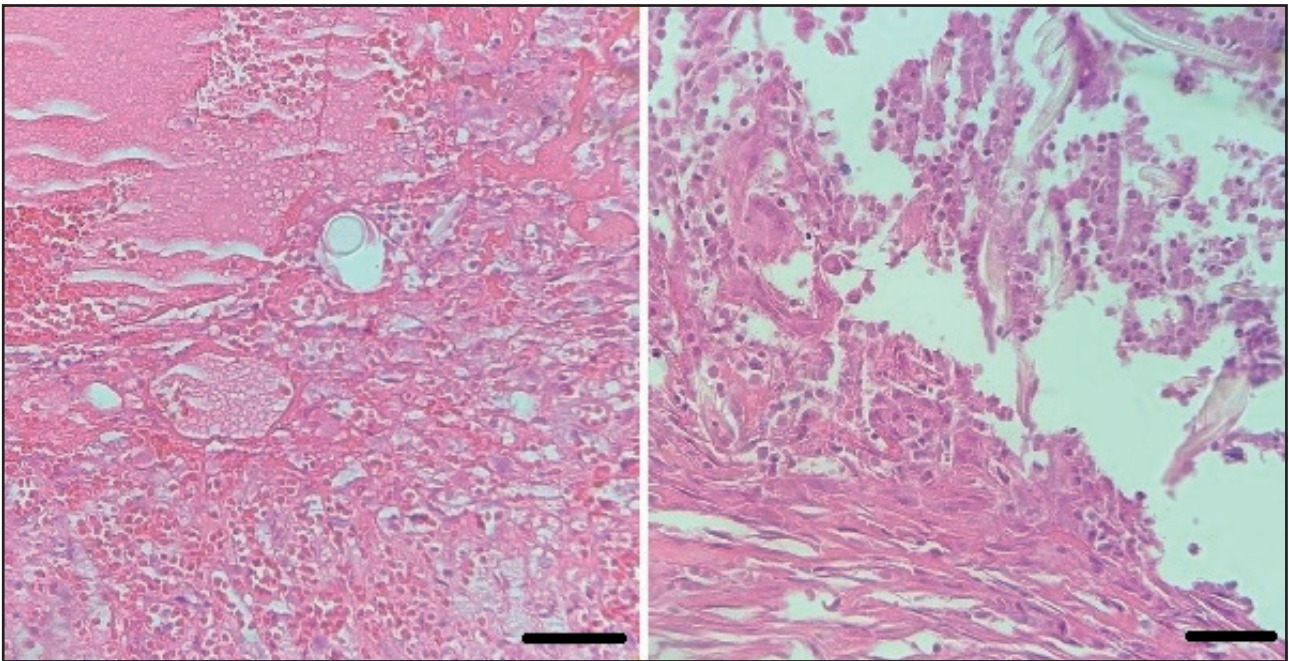


Figure 2. Photomicrography of the left ovary of a 2-year-old Golden Retriever female dog diagnosed with ovarian torsion and pyometra showed neutrophil infiltration, hemorrhage, edema and necrosis spots (HE. 40x). [Bar= 100 µm].

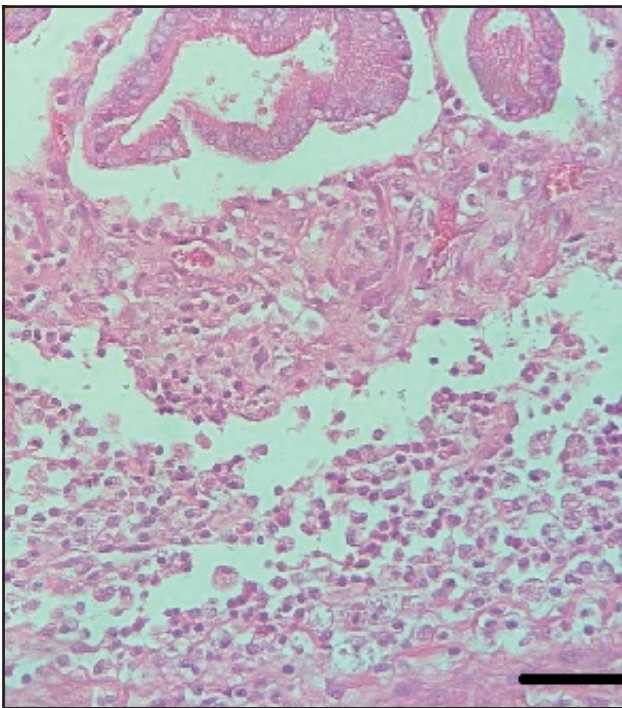


Figure 3. Photomicrography of the endometrium of a 2-year-old Golden Retriever female dog diagnosed with ovarian torsion and pyometra showed neutrophil infiltration (HE. 40x). [Bar= 100 µm].

with excessive agitation through dystocia [4,7,8,15]. The size of the pregnant uterus and/or the pyometra has also contributed to ovary dislocation, and to the subsequent ovarian torsion, due to ovary suspensory ligament enlargement [7,8,13,14]. The female dog of the present report had pyometra; thus, the dilated uterus may have stretched the ovarian pedicle, and it may have made the uterus more susceptible to

torsion. Furthermore, previous cesarean sections and adhesions may have contributed to the development of the ovarian torsion.

The dog did not present any clinical sign of ovarian torsion prior to the presented complications, but had clinical signs of pyometra such as anorexia, polydipsia, polyuria, emesis and purulent vaginal discharge, as described by the literature [14]. The ovarian torsion was incidentally found during the ovariohysterectomy. The ovarian torsion diagnosis was determined through histopathological examination. Hiller *et al.* [6] and Febronio *et al.* [5] reported Doppler ultrasonographic examination, CT and MRI to diagnose the torsion [4]. The CT and MRI were not conducted due to the high cost of these exams. The CBC showed leukocytosis and mature neutrophil, which could be associated with ovarian necrosis and pyometra [13]. However, decreased urea values were associated with low protein diets [13]. On the other hand, RBC Rouleaux was associated with uterine and/or ovarian inflammation. Ovariohysterectomy was the treatment of choice to pyometra and, consequently, to ovarian torsion [9]. The surgery was performed without ovarian torsion reversion to minimize the reperfusion lesions [1].

Ovarian torsion is a rare condition in small animals and clinical diagnosis is made during surgery and confirmed through histopathological exams. To the best of the authors' knowledge, this is the first report of

ovarian torsion associate with pyometra in primipara female dogs in Brazil.

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