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UTERUS, VAGINA AND VULVA
PATHOLOGIES IN THE DOG AND CAT

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Introduction
Uterine, vaginal and vulvar pathology has great importance in the female that is going to be dedicated to reproduction as well as in the that which is not going to be dedicated to mating. One of the main problems that affects the uterus is the pyometra, life threatening bacterial disease for the dog and the cat. The pathologies that affect the vagina, like the vaginitis, despite not having such a severe prognosis can lead to infertility.

Uterine pathology

Cystic Endometrial Hyperplasia – Pyometra Complex
Disease that usually happens in the diestrus and affects characteristically to adult bitches un-neutered and it is presented by an accumulation of a mainly inflammatory exudate in the uterus and that has very variable series of clinical signs1.

Pathogenesis
It is important to differentiate of the metritis, as this is a uterine infection caused by bacteria, but only happens after the post-parturition and with low progesterone concentration. However, the pyometra usually appears during the diestrus when the progesterone levels are high. The first injury that happens in the uterus is the cystic endometrial hyperplasia (CEH), followed by a bacterial contamination. The CEH is caused by the reiterate exposition of the endometrium to the progesterone. Experimentally the uterus exposed to oestrogens does not suffer any specific changes in the endometrium, however, an exposition to progesterone produces the proliferation of endometrial glands, increasing the secretion capacity, keeps the functional closure of the cervix and inhibits the contractibility of the endometrium as well.

Clinical signs.
Vulvar discharge has been described between the 65% and 98% of bitches with pyometra1 When the cervix is open, there is a profuse vulvar discharge mucous to purulent, which can be of a brown reddish to yellow greenish colour. When the cervix is close, the vulvar discharge is minimal or non-existent, there is usually an abdominal distension that is the result of a progressive increase on the size of the uterus. The main clinical signs are depression, vomiting, diarrhoea and anorexia, there is also polyuria and polydipsia on those dogs with secondary renal disease.

Differential diagnosis
All the causes that produce an increase of the size of the uterus have to be valued, the main reason could be pregnancy and those that induce polyuria-polydipsia (PU/PD) like diabetes mellitus, hyperadrenocorticism, renal disease and diabetes insipidus.

Image diagnosing
The radiography of the uterus of the bitches with pyometra is going to reveal an increase of the size of the uterus, but the radiography does not allow to differentiate the uterine size increase produced by a pyometra of that produced due to pregnancy, specially until the day 45 post LH peak when the mineralisation of the foetal bones12. The ecography is yet the chosen diagnostic method, ecographically the pyometra is characterised by an
enlarged uterus, with tubular aspects horns with anechoic or hypo-echoic fluid in them.

**Treatment**

**A. Surgical treatment**
The principal treatment for CEH- pyometra complex is surgical, specially when the pyometra is closed. When the pyometra is closed, the medical treatment can produce a uterine rupture, specially with the prostaglandine based treatment. Before performing the ovariohysterectomy is key to stabilise the female with antibiotherapy, fluidtherapy and progesterone antagonists. The surgical technique is similar to that of routine ovarihoysterectomy, despite the handling of the uterus has to be very careful as the uterus normally is very friable and can break if the handling is not adequate, spilling purulent fluid in the abdomen, worsening the prognosis.

**B. Medical treatment**
We can use prostaglandines being the vest one the natural prostaglandine (Dinolitic ®) with a dose of 0,02 mg/kg sc 2 or 3 times a day during 7-10 days until the uterine content has been totally removed. The control of uterine emptying has to be done by ecography. Nowadays the most use treatment are the progesterone antagonists, Alizine®. Dose used is 0,33 ml /Kg, two injections 24 hours apart and repeated every week until the uterine content has disappeared studies by Fieni and Gobello indicate that there is a major efficiency combined with PG2α. In my clinical experience a unique administration of Alizine has very good results, the Alizine induces a shortening of the lutheal phase, that is believed to be produced by an indirect increase of the prostaglandines PG2α. It can be used as well in a closed pyometra to stabilise prior to surgery with very good results and should not be used in the endometritis post-parturition because the progesterone levels are basal. Every time that Alizine is used we should monitorize the bitch throughout the whole treatment and administer broad spectrum antibiotherapy.

**Subinvolution of placental sites**
The subinvolution of the placental sites is considered a post-parturition alteration that is characterised by a vaginal bleeding that extends more than 3 weeks after birth. It is important to perform a differential diagnosis with coagulopathies, metritis, brucellosis, caudal tract reproductive inflammation, trauma and neoplasia.
It is not recommended to use antibiotherapy as first option because we can increase the micro-organism resistance and difficult the treatment if an endometritis develops.
In some cases if the haemorrhage is severe or there is an ulceration of endometrium/myometrium, we should perform ovariohysterectomy.

**Metritis**
It is an inflammation of the uterus, that affects the endometrium and myometrium and that is caused by an infection by bacteria that colonise the vagina and ascend to the uterus through the open cervix after birth.

**PMain pathologies that affect the vagina.**
The main pathologies that affect the vagina are:

1. Vaginal prolapse
2. Vaginitis

**Vaginal prolapse**
We can define a vaginal prolapse as an increment of the oedematous vaginal tissue inside the vaginal lumen and that in the majority of cases appears through the vulva. This pathology is secondary to the oestrogens' stimulation that are produced physiologically during the pro-oestrus and oestrus.

**Classification**

**Type I**
Mild to moderate increase of the floor and the walls of the vagina that do not cross through the vulva and that decreases when progesterone levels begin to raise.
**Type II**
Vaginal floor prolapsed and lateral walls prolapsing through the vulva.

**Type III**
The prolapse has a screw appearance because not only the floor and lateral walls of the vagina, but also the dorsal part of the vaginal mucous. The vaginal tissue that protrudes during the prolapse is easily ulcerative and the bitch can self mutilated with easiness, as well can void the natural mating.

**Clinical Signs**
The first sign is a mass that appears outside the vulva, there can be discharge from the vulva and dysuria too, despite this happening in a lower percentage.

**Differential diagnosis**
The main differential diagnosis that we should make is from a vaginal neoplasia, based in the origin of the mass that can be found and the fact that the tumoral mass does not modify during the oestral cycle.

**Treatment**
It is going to depend of the size of the vaginal fold prolapsed, if we are treating a high mating value female and if the prolapse appears during the oestrus or at the end of the gestation.
If the prolapse is type I, that does not protrudes outside the vulva, or only does it intermittently, there is no need for treatment because the prolapse will correct normally when the bitch enters the lutheal phase.
The ovariohysterectomy is indicated if the bitch is not going to be destiny for mating.
We can perform a conservative treatment of the prolapsed vaginal tissue keeping the area clean and moist and we would avoid that the bitch would self harm. Lubricant gel or with antibiotics and antiinflamatory can be used. Artificial tears can be used as well.
We can induce the ovulation with the GnRh (2,2 microgr/Kg im) or with HCG (1000 U im) but we will never use progestagens as they can induce CEN-Pyometra complex.

**Vaginitis**
We can define this as the inflammation of the vagina which normally is accompanied by vestibulitis.

**Types:**
1. Prepuberal Vaginitis
2. Vaginitis of the adult bitch

**Prepuberal Vaginitis**
We can define this as the vaginitis that affects bitches of less than one year of age and that can affect bitches from 8 weeks of age. It is interesting to explore the vagina of the bitch during the first vaccination. We will find mucopurulent vulvar discharge and vaginal irritation. The diagnosis will be based on the clinical findings and the vaginal cytology, where we will find plenty of pleomorphic nucleated leukocytes with or without the presence of bacteria.
Treatment
We will only start one if the vaginal discharge is very evident or if we have clinical signs like constant vulvar licking or illness signs, like sudden loss of appetite or anxiety.
We will use antibiotherapy based in the culture and the antibiogram, and we will keep it for at least 4 weeks.

**Vaginitis of the adult bitch**

**It can be:**
1. Primary
2. Secondary

**Primary Vaginitis**
The primary vaginitis is caused by Brucella Canis or Herpesvirus
The secondary vaginitis can be produced by vaginal atrophy after ovariohysterectomy, vaginal tumours, or congenital defects that would affect the vagina, by urine infection, for the presence of a foreign body or by systemic disease like the diabetes mellitus. The vaginitis in an adult bitch happens in neutered and un-neutered bitches with ages in between 1 and 16 years of age and. The main characteristic is a mucous to purulent vulvar discharge and sometimes small flakes of blood can appear in the discharge.

**Clinical Signs**
Pollakiuria, vulvar licking, we can also find PU/PD, urinary incontinence, pruritus and infertility.

**Diagnostics**

**By vaginoscopy**
It is important to perform a vaginoscopic exam, in the vaginitis we can see hyperaemia of the vestibular zone and the vaginal mucous with presence of a more or less profuse exudate. We can also find follicular lesions in the vaginal mucous, erythema of the urethral papilla, in addition, the exam by vaginoscopy is going to allow to check for the existence of congenital alterations, vaginal tumours or foreign bodies like grass seed.

**By vaginal cytology:**
We are going to find plenty of inflammatory cells (neutrophils) with or without bacteria, and intermedial parabasal cells and sometimes some erythrocytes. The biopsy of the floor of the vagina rarely will give any relevant data for the diagnosis.

**Treatment**
We always need to perform a correct evaluation of the clinical history and symptoms. In case of congenital anomalies we would have to correct the cause, the antibiotics should be used always after a culture in which we will obtain the growth of a single bacteria in a pure culture and its correspondent antibiogram. The treatment with antibiotics should be kept for a minimum of 4 weeks. We do not recommended the vaginal washes with antibiotics or antiseptics because they can irritate the vaginal mucous worsening the vaginitis.

**Vaginal and vulvar Neoplasia**
They are rare in the dog, being the commonest the leiomyoma, the surgical excision and biopsy is indicated, in some cases it is necessary to perform an episiothomy to allow a good surgical access to the mass. In the case of leiomyomas reduction of the size of the mass has been obtained by applying progesterone antagonists prior to surgery.

**Bibliography**