



Follicular Cyst in Bitches

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Abstract | Ovarian affections are one of the most common causes of infertility in ruminants. These degenerations affect the reproductive health as well production of the animals. These affections include cystic ovarian degeneration, ovarian tumours, ovaro-bursal adhesion, aplasia or hypotrophy of ovarian tissues. These ovarian affections are generally uncommon in bitches or less reported as most of these cases remain undiagnosed due to technical failure as well as unawareness of owner. Ovarian cysts and ovarian tumours are of great clinical relevance as they are hormonally active structures responsible for the improper signs of the estrus. Presence of follicular cyst for a long time maybe one of the possible causes of pyometra which can be life threatening in untreated cases. The treatment of such cases includes hormonal therapy (GnRH or HCG). Whenever the female presents degenerative cystic uterine diseases or pyometra and it is not intended to reproduction or the clinical condition does not respond to medical therapy, it has been suggested that ovario-hysterectomy will be curative in such conditions.

Keywords | Bitches, Cyst, Ovarian affection, Ovario-hysterectomy, Estrus

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INTRODUCTION

Ovarian affections are uncommon in bitches (Johnston et al., 2001) but they may affect health, fertility or even the life of the animal. Most common ovarian affections appear as cystic ovaries and ovarian tumors (Dow, 1960; Johnston et al., 2001; McEntee, 1990). Cysts represent approximately 80% of ovarian affections (Dow, 1960).

Ovarian cysts have great clinical relevance in bitches. Follicular cysts are defined as fluid-filled structures of various sizes on the ovarian surface. Follicular cysts are hormonally active structures that often represent large antral follicles that not respond to atresia stimulus. They may be unilateral or bilateral on ovary. In bitches, antral non-ovulatory follicles will suffer atresia during diestrus sequential degeneration of the oocyte and granulosa cells suggesting that this may be a self-limiting condition, in the absence of co-existing uterine or mammary dysfunction (Dow, 1960; Schlafer and Miller, 2007; Marino et al., 2010). Due to presence of the physiological follicular phase of the oestro-

us cycle, the bitch shows attractiveness toward the dogs (Schlafer and Miller, 2007).

In most cases, follicular cysts usually occur in middle to old age groups (Johnston et al., 2001). Most reports agree that the incidence of cystic disease in dog ovaries increase with age (Dow, 1960; Pires and Payan-Carreira, 2014; Schlafer and Miller, 2007).

Although, very few literatures indicate the prevalence of ovarian cysts, as most reports describe particular clinical situations affecting a very small number of cases (Shille et al., 1984; Arlt et al., 2011; Sontas et al., 2011) or they focus on particular types of the affections and related conditions (Knauf et al., 2014) or its diagnosis (Akihara et al., 2007). As carnivore species, the follicular cysts do not luteinize past the existing mural granulosa luteinization existing at the moment of its formation. Hence conversion of estrogen to progesterone dominance does not occur in the bitch, as in cats and cows (Ortega-Pacheco et al., 2012).

The pathogenesis of the follicular cyst is unsolved till so far. It has been put forward that follicular cysts originate due to the inability of large antral follicle to respond to the ovulatory stimulus (Ortega-Pacheco et al., 2012, MacLachlan et al., 1987). According to sources of mechanism it may originate from a central failure to produce an adequate amount of gonadotropins, in particular of LH that is essential for follicular growth and ovulation (Knauf et al., 2014).

ETIOLOGY

The causes of canine ovarian cysts are not known very well. The prevalence of canine ovarian cyst varies with the geographical location, breeds and use of drugs. The geographical location, in correlation with the differences contraceptive practices popular usually (Whether or not a female is spayed at youngest ages) while the breeds represented in the region, as often the breeds change with time, modes and even with the sort of veterinary establishment participating in the studies. The use of drugs to manipulate the canine oestrous cycle, particularly for induction of estrus e.g. deslorelin treatment may induce follicular cysts due to anovulation. (Arlt et al., 2011; Borges et al., 2015). Follicular cysts are known to be productive as they retain the capacity to produce estrogen and progesterone, thereby presenting the potential to cause clinical signs (Knauf et al., 2014).

CLINICAL SIGNS

The presence of ovarian cysts can be concluded with a variety of clinical signs including accumulation of fluid in the abdominal as well as in the chest cavity (Marino et al., 2010; Johnston et al., 2001; Kim et al., 2008). Persistent estrus which may be lengthened up to 3 months or shortened inter-estrous interval causes swelling of the vulva due to the high amounts of estrogen. However, if estrogen stimulation persists for more than 30-40 days, the vulva losses the typical turgid swelling displayed during the heat and a flaccid oedema can be noticed. Vulvar discharge may contain blood and occur outside the regular bleeding in the heat cycle (Knauf et al., 2014; Johnston et al., 2001).

Disturbances in the sex steroid ratios favors the development of mucometra and pyometra (Dow, 1960; Schlafer and Miller, 2007) along with polyuria and polydipsia, vomiting, abdominal distension, abdominal distress or pain, mucous or purulent vaginal discharge (Johnston et al., 2001). Enlargement of mammary glands along with masculinization due to secretion of excess testosterone which can be observed in some cases (Navas et al., 2012), Bilateral, symmetrical alopecia on the caudal aspects of both thighs (Ghaffari et al., 2009), lichenification and hyperkeratosis are important symptoms that often takes the owner attention suggests hormonal imbalance and are associated with excessive estrogen impregnation (Sforna et al., 2003;

Ortega-Pacheco et al., 2012).

DIAGNOSIS

Diagnosis should be declared from the information collected by different methods. The first approach adopted collection of the reproductive anamnesis, along with the physical examination excluding suspicions of hyperestrogenism that accompanies follicular cysts. With the development of advance radio-imaging techniques now it is possible to diagnose the ovarian affections. Follicular cyst remains undiagnosed until they have gain enough size. It may be detected by abdominal palpation or during trans-abdominal ultrasound scan. The procedures involved for diagnosis of ovarian cysts i.e. ultrasonography (Diez-Bru et al., 1998), endocrine determinations (Knauf et al., 2014), radiography, visual inspection or histopathology.

Follicular cysts diagnosis is made based on the history of persistent estrus or hyperestrogenism. If estrus symptoms last for more than 28 days, a flaccid oedema of the vulva may be found along with whitish or muco-purulent discharge. Although the bitch displayed estrus behavior, but in general, bitch does not allow mounting (Just like proestrus foreplay). On the physical examination, bitches are often alert and do not show any discomfort, and the rectal temperature, pulse and respiratory rates are within normal ranges. The vulva is frequently swollen and marked abundant dark sero-haemorrhagic or mucous discharge may be present (Yotov et al., 2005).

The vaginal cytology may be helpful to confirm the existence of persistently elevated estrogen (correlation with types of cell found in the slide) impregnation if females with the history of persistent heat or recurrent short inter-estrous interval (provided they are in heat or not).

Follicular cysts are usually visible on ultrasound scans as anechoic structures with thin walls and acoustic enhancement (Diez-Bruet et al., 1998), while the ovary retains its normal original ovoid shape. Ultrasound image of follicular productive cysts remains unchanged for some weeks, while follicles that ovulated assume the echoic pattern of corpora lutea, with the disappearance of the anechoic antrum (Hayer et al., 1993). In general, ovarian follicles at ovulation measure 9 to 12 mm in diameter (Concannon, 2009). The size of the follicular cyst may vary from a few mm up to 300 mm (Ervin & Homanns, 1986).

Abdominal radiography is less helpful than ultrasound imaging, and therefore less frequently accounted for the diagnosis of ovarian cysts. Rather large cysts may be identified as a soft tissue-density mass in the central abdomen, caudal to the kidney.

The peripheral measurements of estrogen and progester-

one determination are not always helpful in the diagnosis of follicular cysts, because they not always evidence clear changes in the serum levels of estrogen (Knauf et al., 2014).

RESULT AND DISCUSSION

In Veterinary medicine the therapeutic options focus mainly on follicular cysts since other cysts do not cause a clinical disease (Sontas et al., 2011). Treatment proposed for follicular cysts is based on the attempt to luteinize the granulosa cell layer in cystic structure so it can regress later, by the end of a diestrus stage (Fayrer- Hosken et al., 1992; Lopate and Foster, 2010).

Available options include the administration of GnRH (Gonadotropin-releasing Hormone, 50µg, intramuscular) or hCG (human Chorionic Gonadotropin; 500IU, intramuscular, twice at the 48h interval). However, several case reports showed a failure of hormonal treatments and an induction of a pyometra (Arlt et al., 2011; Fayrer- Hosken et al., 1992).

Data compiled by Johnston and colleagues (2001) reveals that the success of GnRH treatment was higher compared with hCG. Sporadically, follicular cysts have been tentatively treated with tamoxifen citrate or prostaglandin F2α, but the application of these drugs ensued recurrence and failure of resolution, respectively. (Olson et al. 1989; Johnston et al., 2001).

Whenever the female presents degenerative cystic uterine diseases or pyometra and it is not intended to reproduction or the clinical condition does not respond to medical therapy, It has been suggested that ovariohysterectomy will be curative in most conditions (Jergens & Shaw, 1987). Surgical approaches to ovarian cysts of the follicular type also traditionally encompass the ovariohysterectomy (Johnston et al., 2001). Rare case reports attempt the surgical drainage and flushing of the cystic structures has been attempted, and the few reports available mentioned the cure for the situation (Bassu, 2004; Levy, 2007). Other treatment options of ovarian cysts may be the aspiration of cystic fluid via laparotomy in the way described by or ultrasound-guided aspiration (Fayrer- Hosken et al., 1992).

DIFFERENTIAL DIAGNOSIS OF FOLLICULAR CYST

Ovarian cysts: are of two occurring in the ovary (Schlafer and Miller, 2007). The follicular cysts arising from medium-large antral anovulatory follicles that often originate during a follicular phase and remain in the ovary for longer periods. The non-follicular cysts that include cysts originated from the mesonephric tubules (cysts from the rete ovarii and paraovarian cysts), cysts derived from the surface epithelium, and subsurface epithelial cysts (SEC).

(McEntee, 1990).

Persistent corpus luteum is: identical to that of a normally functioning corpus luteum. Granulosa lutein cells derived from the granulosa cell layer are larger and less darkly stained than the theca lutein cells.

Oophoritis and congested ovaries with single cyst contained free blood with the thick wall.

Ovarian neoplasia: the identified and evaluated papers mainly provided information on histopathological findings (Kennedy et al., 1998; Nilesen et al., 1976).

Epithelial tumours, Papillary adenoma, cystadenoma, papillary adenocarcinoma and other undifferentiated carcinomas.

Sex cordstromal (gonadostromal) tumours - Granulosa cell tumour, Thecoma (theca cell tumour), interstitial cell tumour and Sertoli cell tumour

Germ cell tumours - Dysgerminoma, Teratoma, Embryonal carcinoma

CONCLUSION

Ovarian cysts have great clinical relevance in bitches. Cysts are commonly found in mature and older female dogs, but evolve silently and remain undiagnosed for longer periods. There is a paucity of information of etiology, diagnosis, and treatment. Although, follicular cysts are rarely referred in the canine practice, they may present with hyperestrogenism syndrome that draw the clinician or the owner's attention. Other claimed clinical signs vary with the breed, season, diet and geographical location. Ovarian neoplasia and oophoritis are very common artifacts with cyst. A experienced clinician with sufficient knowledge of ultrasonographic imaging can diagnose the complication. Treatments with drugs may give a significance improvement in some case but not in all case, they may reoccur. The hormonal therapy of ovarian cysts in bitches provides an acceptable treatment, especially to avoid negative side-effects of spaying species. Currently, ovariohysterectomy is suggested as the most common approach.

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CONFLICT OF INTEREST

Author declares no conflict of interest.

Devender Kumar: Manuscript writing.

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