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Vaginal prolapse by ovarian follicular cysts in a female Jin-do dog

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Abstract : A six-year-old, female Jin-do dog was referred for the recurrence of vaginal prolapse. Less than 7 months previously, the dog with the vaginal prolapse had been treated with hormone therapy because ultrasonography had identified a single follicular cyst in the left ovary. Three months after the first visit, the dog came into heat and the vaginal prolapse recurred. Ultrasonography showed multiple follicular cysts in both ovaries and radioimmunoassay detected a plasma estradiol-17β concentration of 13.3 pg/ml. Treatment involved the repositioning of the vaginal prolapsed, ovariohysterectomy and the resection of the protruding tissue. The dog had been completely recovered two months later after the treatment.

Keywords : follicular cysts, ovariohysterectomy, ultrasonography, vaginal prolapse

Case

Ovarian follicular cysts are fluid-filled structures in the ovary with a distinct wall that may be secreting estrogen with subsequent estrogen-mediated effects on the female canine reproductive tract and extrareproductive system [5]. Normal mature ovarian follicles in dogs average 5 to 8 mm in diameter. Ovarian follicular structures greater than 8 mm in diameter present during proestrus or estrus prior to ovulation, or follicles of any size present during late estrus (postovulation), diestrus, or anestrus, are defined as follicular cysts [2]. Ultrasonographically, follicular cysts appear as focal hypoechoic to anechoic structures that may show far enhancement. Vaginal prolapse is the protrusion of edematous vaginal tissue into the vaginal lumen and often through the vulvar lips of female dogs. This disorder is caused by accentuation of the normal increase in vaginal hyperemia and edema secondary to the estrogen stimulus occurring during proestrus and estrus [5]. This case describes the diagnosis of secondary vaginal prolapse caused by multiple follicular cysts in the ovaries of a dog.

A six-year-old, female, 19 kg weight Jin-do dog was referred to the Veterinary Medical Teaching Hospital of Chonnam National University with the recurrence of a vaginal prolapse. Seven months previously the dog had presented with a protrusion of edematous vaginal tissue 1 cm in length. Ultrasonography revealed a single follicular cyst in the left ovary (> 9.0 mm) (Fig. 1A). Hormone therapy with gonadotrophin releasing hormone (GnRH) (Fertiline, 50 μg/ml, IM; Vetoquinol, Korea) was the treatment chosen. After treatment, the single ovarian follicular cyst disappeared and the vaginal prolapse regressed spontaneously. Three months after the first visit, the owner suspected that the dog had come into heat because of vaginal discharges and a recurrence of the vaginal prolapse was observed. The dog was readmitted to the hospital with a vaginal prolapse consisting of a 5 cm diameter mass of tissue protruded from the vulva. The vaginal prolapse was ventrocaudal to the external urethral orifice. There was no inflammation or trauma because the owner had kept the dog inside. The serum chemistry and complete blood count showed no specific results. Blood was centrifuged to test the plasma estrogen and progesterone by radioimmunoassay (RIA) (Coat-A-Count; Diagnostic Products Corporation, USA), RIA revealed that the estradiol-17β concentration was 13.3 pg/ml and the progesterone concentration 0.1 ng/ml. Ultrasonography revealed multiple follicular cysts in both ovaries (Fig. 1B). In the right ovary, there were two cysts and their average diameters were 8.0 and 9.1 mm, respectively. In the left ovary, there were multiple cysts and the largest cyst had a diameter of 9.1 mm. It was concluded that the vaginal prolapse was related to an exaggerated response

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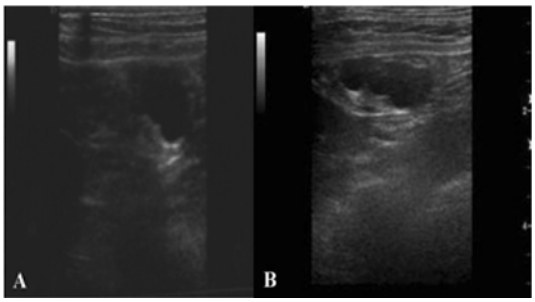

Fig. 1. Ultrasonographic images of ovarian cysts in dog. Unilateral single ovarian cyst at first visit (A) developed into bilateral multiple ovarian cysts after 7 months (B).

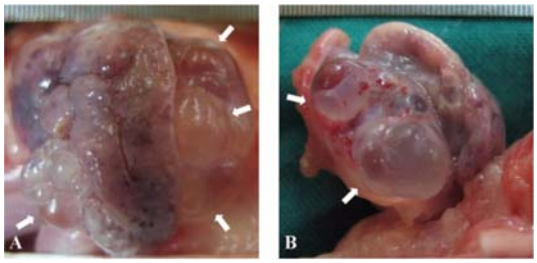

Fig. 2. Photographs showed multiple follicular cysts in left (A) and right (B) ovaries. (A) There are several cysts (white arrows) in the left ovary. (B) Two cysts (white arrows) are present in the right ovary.

to estrogen caused by multiple ovarian follicular cysts.

A vaginal reposition was performed that included purse-string sutures and ovariohysterectomy (OHE). At celiotomy, it was possible to observe multiple follicular cysts in both ovaries (Fig. 2). A mass protruding from the vulva was kept clean and protected from drying and regressed spontaneously. After 2 months, the exposed protruding tissue had returned only slightly, so a surgical resection of the remaining tissue was performed (Fig. 3). The dog recovered completely after the surgical therapy without any complications.

The pathogenesis of follicular cyst disease in the dog ovary is not known [2]. However, follicular cysts lined with granulosa cells may secret estrogen. Increased serum estrogen concentrations may have caused the physical and behavioral changes in the affected dog. The vaginal prolapse in this case was secondary to the ovarian follicular cysts and concurrent cystic endometrial hyperplasia-pyometra was also present while the cysts recurred later.

Limited success has been reported with hormonal therapy on ovarian follicular cysts and the rate of

Fig. 3. Photograph of the protruding mass (4 cm × 4.5 cm × 4 cm). An episiotomy of the remaining mass was performed for surgical resection.

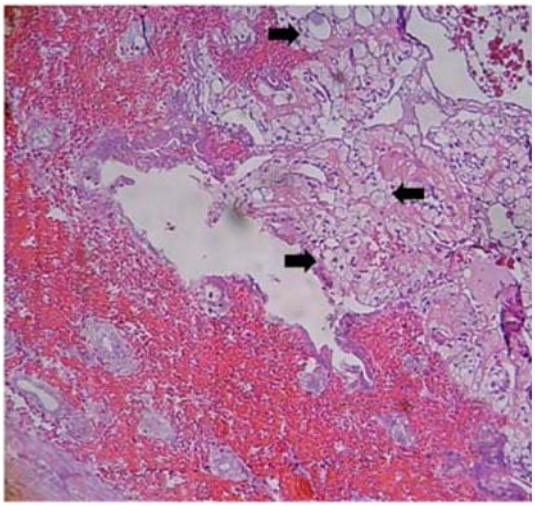

Fig. 4. Cystic endometrial hyperplasia of uterus, characterized by dilated cystic glands (black arrows). H&E stain, ×100.

recurrence has not been reported [2]. In this case, hormonal therapy with GnRH was successful in that the vaginal prolapse regressed spontaneously and estrus occurred. Nevertheless, the vaginal prolapse and multiple follicular cysts recurred. Evidence for the contributory role of estrogens is strong because resolution of the prolapse often occurs spontaneously after cessation of estrus or after OHE [3, 6]. Earlier report [1] suggest that vaginal prolapse occurs primarily during proestrus or the early stages of the estrous cycle. In the bitch described here the prolapse did not resolve on its own, although estrus had finished within 4 months. Moreover, after the

estrus period the mean estradiol-17β levels were continuously elevated. In conclusion, it was assumed that the cause of the vaginal prolapse included excessive estrogens caused by multiple follicular cysts.

Follicular cysts complicate cystic endometrial hyperplasia-pyometra [1, 7]. In this report, the cystic endometrial hyperplasia-pyometra was observed on histopathological examination (Fig. 4). Histopathologically, cystic endometrial hyperplasia, endometritis were present in the thickened area. Treatment of vaginal prolapse involves either decreasing the estradiol-17β concentrations that have been elevated by the multiple follicular cysts or removing the protruding tissue. The OHE and resectioning of the remaining, protruding mass were performed after repositioning the vaginal wall. Prevention of vaginal prolapse can be achieved by ovariectomy or, more commonly, by OHE as surgical removal of the affected ovary or the OHE together with removal of the observable polycystic ovaries is a common treatment [4]. This is a case report of unilateral ovarian follicular cysts treated with GnRH, followed by recurrent bilateral ovarian follicular cysts with vaginal prolapse.

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