Ultrasound Guided Transvaginal Follicular Aspiration Technique for Chronic Follicular Cyst in a Holstein Friesian Crossbred Cow

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ABSTRACT

A ten-year-old pluriparous crossbred cow with the history of prolonged estrus signs was presented to the Madras Veterinary College Teaching Hospital. Per rectal examination revealed follicular cyst in the right ovary. On real-time ultrasonography, a large anechoic follicle and multiple follicles were visualized in the right and left ovary, respectively. The case was diagnosed as Cystic Ovarian Degeneration due to follicular cyst and treated with 20µg-GnRH intramuscularly. Re-examination after 10 days revealed persisted cyst on right ovary and even after second GnRH, the condition persisted. Further, the cow was treated with PGF2α @ 500µg intramuscularly but cysts the persisted. Then, the cyst was punctured and follicular fluid aspirated through ultrasound guided transvaginal probe with a needle and about 12 ml of follicular fluid was recovered but the cyst recurred again. Hence, from the study it was concluded that the case was non-responsive for either hormonal therapy or ultrasound guided transvaginal follicular aspiration which might be due to its chronic, secretory nature and thus the prognosis remains poor.

Key Words: Chronic Follicular cyst, Ultrasonography, Transvaginal follicular aspiration.

Cystic ovarian disease (COD) is a major cause of reproductive failure and it is characterized by the presence of large, persistent, anovulatory follicles in the ovaries due to malfunction of the neuroendocrine mechanism controlling ovulation and thus, interferes with the cyclicity. Ovarian Cyst was previously defined as enlarged anovulatory follicle like (<2.5 cm) and persisting for 10 or more days but currently defined as cystic follicular structures of at least 17 mm diameter that persist for more than 6 days in the absence of corpus luteum (Jeengar *et al.,* 2014). The diameter of the cyst may vary and reach up to

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25 mm or larger (Youngquist and Threlfall, 2007). In most cases (62-85%), cows with luteinized cysts remain anoestrous (Watson and Cliff, 1997) as a result of the production of progesterone by the luteinized cysts.

The adverse effects of COD on fertility are related to increased intervals between calving and first service, and between calving and conception. The treatment of cystic ovary involves use of GnRH, hCG and progesterone but with variable outcomes (Honparkhe *et al.*, 2011; Singh *et al.,* 2012). Alternatively, puncturing the cyst and emptying of the cystic fluid may be advantageous in such cases (Cairoli *et al.*, 2002). In this regard, transvaginal-guided needle aspiration (Lievaart *et al.*, 2006) or transvaginal ultrasound guided physical ablation (Amiridis, 2009) of ovarian cysts have been considered safe as compared to manual rupture of cyst during trans-rectal palpation. Hence, the ultrasound guided follicular aspiration technique was attempted to correct this chronic follicular cystic condition.

Case history and clinical observations

A ten-year-old Holstein Friesian crossbred pluriparous cow was presented to Large Animal out-patient Gynaecology ward, Madras Veterinary College Teaching Hospital, Chennai-600 007 with the history of one calving a year before. The cow was artificially inseminated four times, bred to natural service on two ocssions, but the cow was exhibiting prolonged estrus signs and nymphomania for the past 3 months. On physical examination, all vital parameters were found to be normal. Per rectal examination revealed normal cervix and uterus but the right ovary has a large lemon sized fluctuating cyst with few follicles in the left ovary with absence of corpus luteum. On real-time ultrasonography, a large anechoic follicle with more than 32 mm diameter on an average (Fig.1) and three follicles of size 12.8 mm, 4.4 mm and 4 mm on an average (Fig.2) were visualized in the right and the left ovary, respectively (Table 1) . Based on the observations of rectal examination and ultrasonography, the case was diagnosed as Cystic Ovarian Degeneration with a follicular cyst.

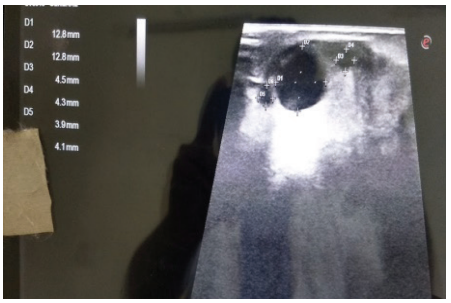

Fig.1: A large anechoic follicle with more than 32 mm average diameter in right ovary

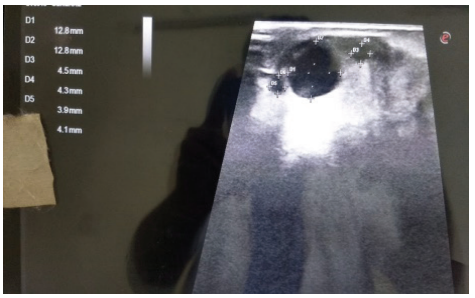

Fig.2: Three follicles ranging from 4-13 mm in left ovary

Fig. 3a, 3b: Ultrasound guided Transvaginal probe connected with needle (Esoate, Italy)

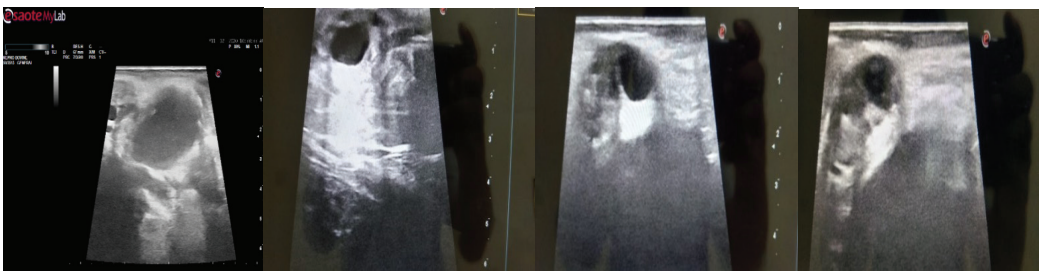

Fig. 5a, 5b, 5c, 5d: U/S images showing reducing size of cyst during aspiration

Treatment and discussion

The cow was treated with GnRH (Buserelin acetate) @ dose rate of 20µg intramuscularly on day 0 (Table 2) . Re-examination on 10th day revealed the persistence of the cyst on the right ovary pressure of CL in the left ovary. On ultrasonography examination it was found that and CL on left ovary, even after second GnRH treatment, the cyste condition persisted on day 20 with mild thickening of follicular wall of about 3.2 mm in the right ovary. Further, PGF2α @ dose rate of 500µg (Cloprostenol sodium) was administered intramuscularly on day 20 and ultrasonograhic examination on day 30 revealed persisted cystic follicle on the right ovary and cyst or the CL in this left ovary. Hence, the cystic follicle was punctured by aspiration (Fig.5a, 5b, 5c, 5d) through ultrasound guided transvaginal probe connected with a needle (Esoate, Italy) (Fig.3a, 3b) and around 12 ml of follicular fluid was aspirated (Fig.4). However, examination on day 40 revealed the recurrence of the follicular cyst.

Follicular cysts are most commonly treated with GnRH, which causes secretion of luteinizing hormone (LH) and luteinization of the cyst. This in turn makes the cyst sensitive to PGF2α, and regression of the cyst can then be brought about 8-9 days later with exogenous PGF2α (Brito and Palmer, 2004). In the present case, the attempt was made to bring about ovulation of the follicle by intramuscular injection of GnRH. But, only the follicles on the left ovary responded, while the cyst on the right ovary persisted. The cyst on the right ovary did not undergo luteinization despite a second injection of GnRH and CL formed only on the left ovary responsed to the

prostaglandin treatment. Many variables such as time of diagnosis, period of Ovarian cyst persistence, presence of mucometra and milk production determine the outcome of therapy (Purohit, 2008). Removal of the cyst will destroy the estrogen source, promoting new follicular development and ovulation (Amiridis, 2009). Hence the follicular cyst ablation technique was attempted in the present case, but it recurred due to its chronicity and secretory nature.

It was concluded that the cystic follicle not responsive to either hormonal therapy or ultrasound guided transvaginal follicular aspiration which might be due to its chronic, secretory nature and thus the prognosis remained poor. However, ultrasound guided transvaginal follicular aspiration technique can be tied in early cyst condition and to avoid repeated hormonal therapies in cows.

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