CASE REPORT

Ultrasonographic and Cytological Analysis of Sub-Involution of Placental Sites in a Bitch: A Case Report

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Sub-involution of the placental site (SIPS) is characterized by presence of abnormally low-resistance widely dilated uteroplacental arteries in the absence of substantial amounts of retained products of conception (Petrovitch, 2009). It is a problem which occurs due to delay in uterine involution and is clinically characterized by continuous sanguineous vaginal discharge after parturition. This is mainly seen in young bitches after first whelping principally due to aberrations in normal healing of maternal endometrium. Although it is quite normal physiologically to have hemorrhagic vaginal discharge after whelping up to 3 weeks, but if it lasts for more than 3 weeks than it is considered as sub-involution of placental sites. However, this discharge can last up to 7-12 weeks post-whelping (Johnston *et al.,* 2001). The primary reason for this sero-sanguinous discharge is excessive invasion of trophoblast cells into deeper layer of uterine tissues even after whelping and voiding of placental tissues. Under normal physiological conditions, it regresses slowly during involution, but in cases leading to SIPS the trophoblast cells penetrate deeper and deeper into maternal endometrium resulting in prolonged sero-sanguinous discharge. In some cases the continuous blood discharge may predispose the animal to anaemic condition which needs to be guarded.

Case History and Clinical Observations

A one and a half year-old German Shepherd bitch was presented to Teaching Veterinary Clinical Complex of the College, BHU, Mirzapur (India) with history of continuous dark brownish vaginal discharge since last 3 months, and inappetence since last 2 months. The breeding history revealed that it had whelped for the first time before 3 months. Animal was previously treated with broad spectrum antibiotics, anti-hemorrhagic and methylergonovine without any recovery.

On clinical examination, bitch was found active with normal vital parameters, pinkish conjuctival mucous membrane, without abdominal enlargement but with mildly swollen vulval lips. On per vaginal examination, vaginal passage was smooth and without any mass ruling out chances of trans-venereal tumor (TVT). There was continuous sero-sanguineous discharge through vulva which was in line with owner's complaint.

For cytological analysis, vaginal swab was taken aseptically, avoiding the clitoral fossa, a smear was prepared by rolling it over the glass slide, air-dried and stained with Giemsa stain. The cytological examination revealed presence of polynucleated trophoblast cells indicating a case of SIPS. In addition to the trophoblast cells, white blood cells and red blood cells were also visualized under microscope (Fig. 1). Ultrasonography was employed to ascertain the condition of uterine musculature along with placental sites. Accordingly, the USG findings showed that the endometrium was thickened with hypoechoic areas at placental sites and hyperechoic between placental sites. Moreover, few anechoic areas were also observed which may be due to accumulation of sero-sanguineous discharge (Fig. 2).

Treatment and Discussion

Consequent to breeding history, cytological findings and USG examination of the animal, the case was diagnosed as sub-involution of placental sites (SIPS). Medroxyprogesterone @ 40 mg once orally and a dose of pheniramine maleate @ 05 mg/kg b. wt. was prescribed. As the blood parameters were within normal range, no additional treatment was recommended. The bitch recovered uneventfully.

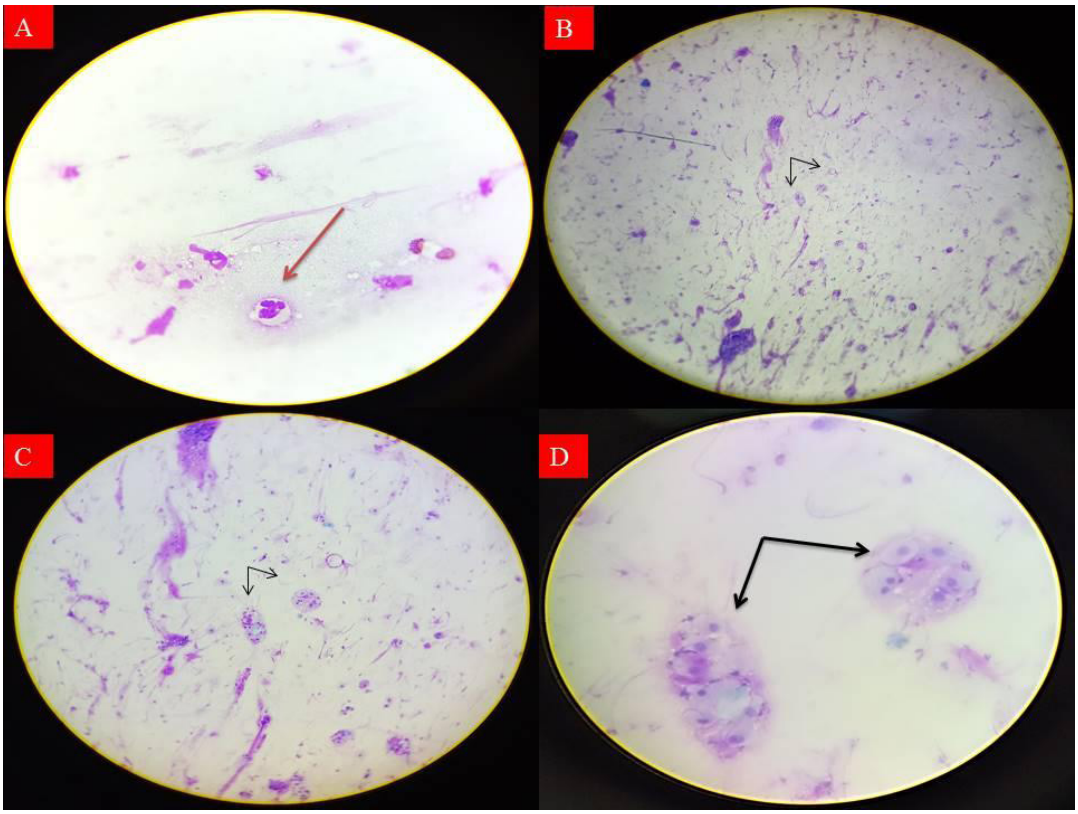

Fig. 1: Impression smear of a bitch suffering from sub-involution of placental sites (red arrow: neutrophil cells and black arrows show trophoblast cells).

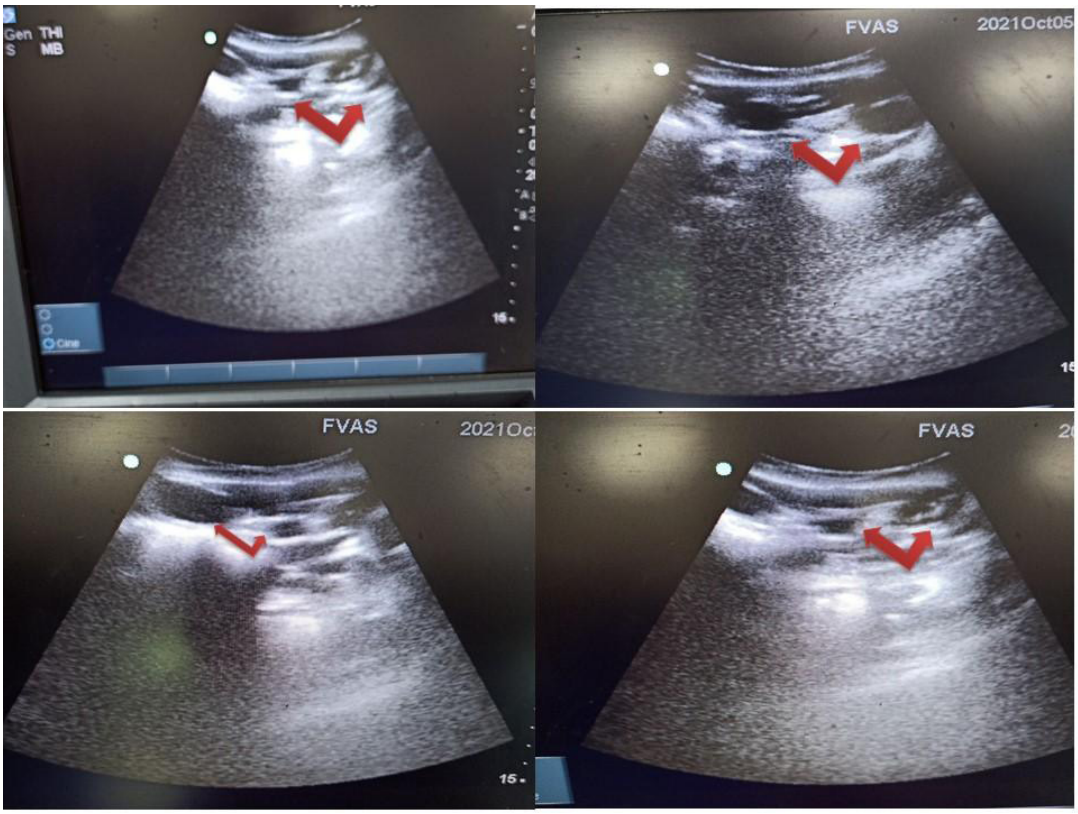

Fig. 2: Ultrasonographic examination of a bitch suffering from SIPS. Arrow mark indicated anechoic area denoting presence of serosanguineous fluid *in utero*.

Sub-involution of placental sites (SIPS) occurs when normal healing of uterine wall does not take place at the sites of placental attachments. Under normal physiological conditions, endometrium repairs itself once the placenta tears away from the wall as the puppy is born. However, failure of this process may result in bloody vulvar discharge 3 or more weeks after whelping. In most of the cases the affected bitch will void drops of blood in a continuous manner and owner may confuse with proestrual bleeding (Voorhorst *et al*., 2013). However, upon physical examination and after employing certain specific diagnostic tools this condition can be diagnosed. Based on the history, age, cytological examination, USG findings and uterine biopsy the diagnosis can be confirmed. This condition is observed in young bitches after their first whelping and all other parameters appear to be normal. As far as cytological analysis concerned, the presence of trophoblast cells confirms the condition as SIPS. Trophoblasts are the cells forming the outer layer of a blastocyst and are formed during the first stage of pregnancy (Weydert and Benda, 2006). The villous trophoblasts have two cell populations: undifferentiated cytotrophoblasts and fully differentiated syncytiotrophoblasts. The syncytiotrophoblasts are the multinucleated cells which are observed in SIPS condition due to their penetration deep into uterine musculature.

The treatment of SIPS varies from low doses of oral progestagen to ovariohysterectomy. The advantage of Medroxyprogesterone is that it can be given @ 2 mg/kg or 40-50 mg at once. However, ovariohysterectomy is essential in cases where anemic condition is involved and the life of the bitch is threatened.

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References

Johnston, S.D., Root, K.M.V. & Olson, P. S. (2001). Periparturient disorders in the bitch. In Book *Canine and Feline Theriogenology,* 1st Edition, Saunders, Philadelphia, London, 139-141.

Petrovitch, I. (2009). Subinvolution of the placental site. *Journal of Ultrasound in Medicine, 28*, 1115-1119.

Voorhorst, M.J., Brederode, J.C., Albers-Wolthers, C.H.J., de Gier, J., & Schaefers-Okkens, A.C. (2013). Successful treatment for sub-involution of placental sites in the bitch with low oral doses of progestagen. *Reproduction in Domestic Animals, 48,* 840–843.

Weydert, J.A., & Benda, J.A. (2006). Sub-involution of the placental site as an anatomic cause of postpartum uterine bleeding: A review. *Archives of Pathology & Laboratory Medicine, 130,* 1538-1542.