

EARLY DIAGNOSIS AND MANAGEMENT OF BOVINE PYOMETRA- A CASE REPORT

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SUMMARY

Bovine pyometra is a reproductive disease, that also causes infertility, reduced milk production, increased treatment cost and thereby huge financial loss mainly due to late diagnosis. This communication reports the advantage of transrectal ultrasonography (TRUS) in bovine reproduction for the diagnosis of uterine pathological conditions as the earliest in a pluriparous cow. Treatment was provided with prostaglandin and systemic antibiotic therapy and complete evacuation of uterine contents observed on sixth day by TRUS.

Keywords: Bovine, Pyometra, Transrectal, Ultrasonography

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Uterine infections are common disorders affecting dairy cows during the postpartum period, when the protective barriers of uterus are breached. Before the complete elimination of bacterial contamination in the uterus after calving, returns to normal ovarian cyclic function will result in chronic endometritis and pyometra (Noakes *et al.*, 2019). The inflammatory changes in the endometrium will interfere in absorbance of prostaglandins in systemic circulation thereby leading to persistent corpus luteum (CL) along with closed cervix ultimately resulting in accumulation of exudates in the uterine lumen and is known as pyometra (Noakes *et al.*, 2019).

The organisms most commonly associated with uterine disease in cattle are *Trueperella pyogenes* and *Fusobacterium necrophorum* (Brodzki *et al.*, 2014). Cow that suffers from pyometra shows few or no signs of ill health, but is infertile. Usually, there is no purulent vaginal exudate, whereas intermittent purulent discharge observed when the cow lies down, urinates or defecates (Noakes *et al.*, 2019).

Differential diagnosis of pyometra from early stage of pregnancy by per-rectal examination is difficult, because both conditions are characterized by a period of anoestrus and prolonged luteal lifespan (Noakes *et al.*, 2019). Ultrasound techniques are becoming increasingly important in animal reproduction, offering both a mean of diagnosis and useful therapeutic tool (Medan and El-Aty, 2010). As a pregnancy diagnostic method, TRUS is a best aid to differentiate pyometra from pregnancy even in early stage (Noakes *et al.*, 2019). The present case pointed out the importance of TRUS for early diagnosis and management of pyometra in bovines.

A case of pyometra was studied in a pluriparous cow

maintained at University Livestock Farm and Fodder Research Development Scheme, College of Veterinary and Animal Sciences, Mannuthy, Kerala. The cow had a history of retention of foetal membranes in last calving, followed by chronic endometritis, which was treated successfully by parenteral antibiotic therapy with ceftriazone and intrauterine povidone iodine saline douche. After clinical recovery, skipped one heat with clear discharge and inseminated on second heat.

The animal was apparently healthy with normal feed and water intake, but did not return to oestrus after last insemination. Routine pregnancy diagnosis by sonographic examination was conducted on day 30. Rectal examination revealed equal distension of both the uterine horns, but with a doughy consistency. Presence of corpus luteum (CL) noticed on right ovary. No vaginal discharge was evident. TRUS using linear probe (5 MHz) evinced distended uterine lumen with echogenic contents (Fig 1.A), but no definite signs of pregnancy could be detected. Right ovary evinced a functional CL of size 20.3 mm (Fig 1.B) with adequate vascularity and a follicle of size 12.15 mm. Based on the clinico-gynaecological and TRUS findings, the condition was diagnosed as pyometra.

Treatment was provided with Cloprostenol sodium (500 mcg, I/M) on first day, along with five days of systemic antibiotic therapy (Inj. Cefotiofur sodium @ 2.2 mg/kg, I/M). After 36 h of Cloprostenol injection, purulent vaginal discharge (contain >50% pus) was expelled (Fig. 2A). Samples for endometrial cytology were collected by cytobrush technique. Large numbers of poly-morpho neutrophils were noticed during cytology examination (Fig. 3A). Disposable vaginal speculum was used to view the anterior vagina as well as to collect a vaginal swab without contamination from contact with walls of vagina

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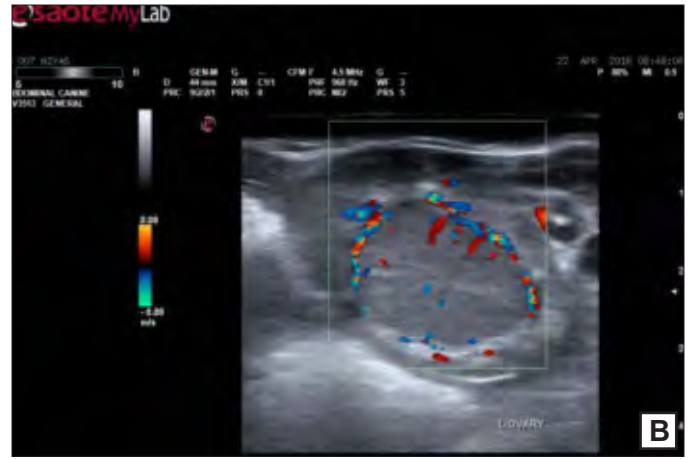
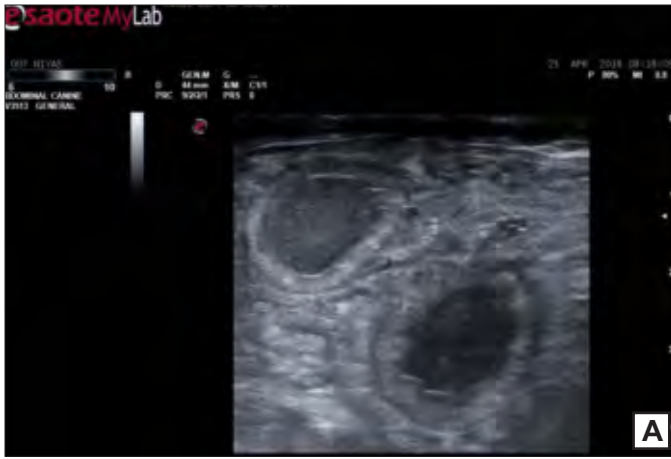


Fig. 1. B-mode sonogram of uterine horns (A) at 30th day of AI: Distended uterine horns with hypoechoic speckled echogenic contents inside the lumen and (B) Colour Doppler sonogram of right ovary showing increased vascularity to functional CL.

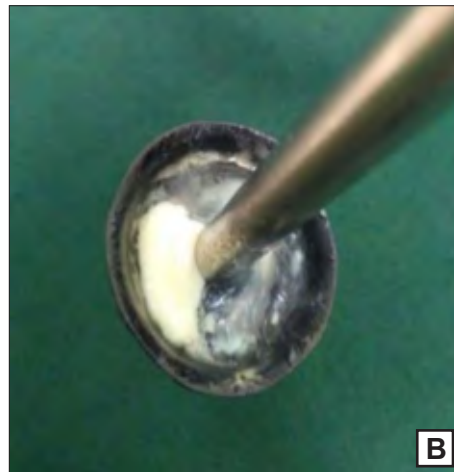


Fig. 2. Nature of discharge collected using metricheck device during different stages of uterine evacuation (A) Pus discharge at 36 h of Cloprostenol injection (B) less purulent discharge on day 4 and (C) clear discharge on day 6.

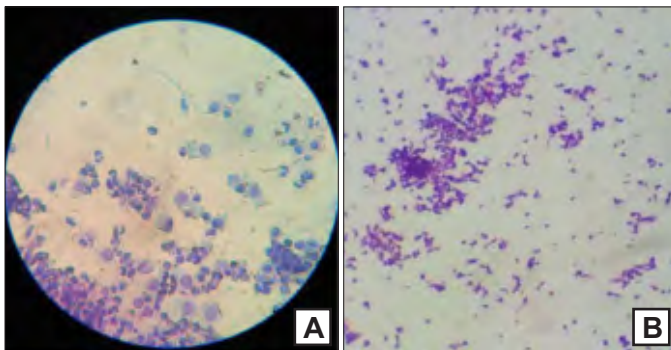


Fig. 3. (A) Presence of large number of poly-morpho neutrophils noticed during endometrial cytology examination (B) *Truiperella pyogenes* isolated from the pus

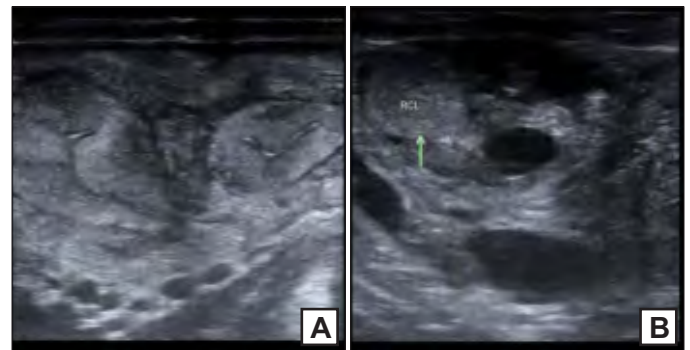


Fig. 4. B-mode sonogram of uterus (A) and ovary (B) at day 6 after Cloprostenol injection showing complete evacuation of uterine contents and regression of CL, respectively

and vestibule. Purulent discharge collected from anterior vagina and the culture of the sample revealed the presence of *Truiperella pyogenes* (Fig. 3B). Vaginal discharge became less purulent by fourth day of treatment (Fig. 2B) which became clear by sixth day (Fig. 2C). TRUS evaluation performed on sixth day of treatment confirmed the complete evacuation of uterine contents (Fig. 4A) as well as regression of CL in the right ovary as evinced by a

reduction in size, change of echo texture and reduced vascularity of CL (Fig. 4B). Intrauterine antibiotic douche was done using Cephapirin. The animal was recovered uneventfully and exhibit normal estrous in the next month. Postpartum uterine disease is associated with most prevalent pathogens like *Truiperella pyogenes* (49%) and *E. coli* (37%) (Williams *et al.*, 2005). *Truiperella* spp. was also isolated from the uterine pus collected using

disposable vaginal speculum in the present case. Cholesterol-dependent cytolysin pyolysin secreted by *Trueperella pyogenes*, which causes cytolysis particularly of endometrial stromal cells, thereby *Trueperella pyogenes* is associated with the severity of endometrial pathology and clinical disease (Amos *et al.*, 2014).

Ultrasonography is a non-invasive technique, which provides accurate and rapid result at the time of examination. Early utilisation of ultrasound technology offers the assessment of pregnancy status, foetal viability, normal and pathological conditions of ovary, uterus and cervix thereby improving reproductive efficiency in bovines (Medan and El-Aty, 2010). Bartolome *et al.* (2004) used ultrasonography at 27 days post-artificial insemination in cows for the diagnosis of non-pregnant animals. The present case of pyometra was diagnosed during routine pregnancy diagnosis on day 30 of AI by trans-rectal ultrasonography. Diagnosis is based on the observation of TRUS, that is presence of active CL along with hypoechoic speckled echogenic contents in the uterus with no evidence of embryo. It can be corroborated with the reports of Mushonga *et al.* (2017), the authors noticed pyometra in a cow during slaughter characterised with persistent CL, pus in the uterus together with closed cervix and the cow having a history of prolonged non return to service.

Prognosis of uterine infections depends on, evacuation of the uterine contents, elimination of the infectious agents and initiation of new oestrous cycle. Prostaglandin is the agent of choice for therapy of pyometra for evacuation of uterine contents (Noakes *et al.*, 2019). In the present case, the expulsion of the purulent fluid seen from third day and complete evacuation noticed on sixth day of prostaglandin F_{2α} administration, which is in accordance with the observation of Gustafsson (1980) who reported a complete evacuation of the uterine contents within 3 to 9 days in 85% to 90% of prostaglandin F_{2α} treated cows.

Therapy for eliminating the infectious agents from uterus constitutes intrauterine therapy, systemic antibiotics and supportive therapy (Noakes *et al.*, 2019). In present case, animal was treated systemically with intramuscular administration of Ceftiofur sodium @ 2.2 mg/kg body weight followed by intra uterine therapy with Cephapirin (Metricef®; 19g). Ceftiofur sodium is the most commonly

used third-generation cephalosporin for uterine infection that has broad-spectrum activity against gram-positive and gram negative bacteria (Chenault *et al.*, 2004).

In conclusion, bovine pyometra is characterized by the accumulation of purulent or mucopurulent exudates in the uterus and accompanied by persistence of an active CL. TRUS is the best non-invasive technique and highly beneficial for an early diagnosis of bovine pyometra. The treatment of choice in bovine pyometra is prostaglandin F_{2α} along with systemic antibiotic.

REFERENCES

- Amos, M.R., Healey, G.D., Goldstone, R.J., Mahan, S., Duvel, A., Schuberth, H.J., Sandra, O., Zieger, P., Dieuzy Labaye, I., Smith, D.G.E. and Sheldon, I.M. (2014). Differential endometrial cell sensitivity to a cholesterol-dependent cytolysin links *Trueperella pyogenes* to uterine disease in cattle. *Bio. Reprod.* **90(3)**: 1-13.
- Bartolome, J.A., Silvestre, F.T., Kamimura, S., Arteché, A.C.M., Melendez, P., Kelbert, D., McHale, J., Swift, K., Archbald, L.F. and Thatcher, W.W. (2005). Resynchronization of ovulation and timed insemination in lactating dairy cows: I: Use of the Ovsynch and Heatsynch protocols after non-pregnancy diagnosis by ultrasonography. *Theriogenology.* **63(3)**: 1617-1627.
- Brodzki, P., Kostro, K., Brodzki, A., Niemczuk, K. and Lisiecka, U. (2014). Cytometric analysis of surface molecules of leucocytes and phagocytic activity of granulocytes and monocytes/macrophages in cows with pyometra. *Reprod. Domest. Anim.* **49(5)**: 858-864.
- Chenault, J.R., McAllister, J.F. and Chester, S.T. (2004). Efficacy of ceftiofur hydrochloride sterile suspension administered parenterally for the treatment of acute postpartum metritis. *J. Am. Vet. Med. Assoc.* **224(10)**: 1634-1639.
- Gustafsson, B.K. (1980). Treatment of bovine pyometra with prostaglandins. In: Current therapy in theriogenology. Morrow, D.A. (Edt.). WB Saunders, Philadelphia. pp. 189-193.
- Medan, M.S. and El-Aty, A.A. (2010). Advances in ultrasonography and its applications in domestic ruminants and other farm animals reproduction. *J. Adv. Res.* **1(2)**: 123-128.
- Mushonga, B., Kaurivi, B. and Chiwome, B. (2017). Persistent corpus luteum in a 9 year-old Afrikaner cow: a case report. *Global Vet.* **18(2)**: 146-150.
- Noakes, D.E., Parkinson, T.J. and England, G.C.W. (2019). Veterinary reproduction and obstetrics. (10th Edn.), Elsevier, Edinburgh, Scotland.
- Williams, E.J., Fischer, D.P., England, G.C.W., Dobson, H., Pfeiffer, D.U. and Sheldon, I.M. (2005). Clinical evaluation of postpartum vaginal mucus reflects uterine bacterial infection and the inflammatory response to endometritis in cattle. *Theriogenology.* **63(1)**: 102-117.