Buffaloes are unique in many ways compared to other cattle in many aspects of animal health. The reproductive performance in buffalo is poor due to various diseases of the reproductive system, including genital prolapse. Prepartum vaginal prolapse is one of the major reproductive disorders in buffaloes. The presented case report of a primiparous Murrah buffalo which was affected with pre-partum vaginal prolapse of low grade intensity which did not respond to conventional therapy instituted and latter after assisted parturition complicated into utero-vaginal prolapse. After manual repositioning, infection in the uterus resulted in puerperal metritis and later urinary bladder infection. The condition was not responding favorably to intrauterine and systemic medication with suitable antibiotic, anti-inflammatory and other supportive therapy. It resolved only after antibiotic administration both locally oxytetracycline hydrochloride (500mg tablet Pfizer® dissolved in 60 ml pyrogen free water) into the urinary bladder as well as systemic intravenous infusion of broad spectrum antibiotic combination of Ceftriazone 3000 mg and Tazobactam 375 mg (Vetazo® Zydus Animal Health Limited) for 3 days. The present case report signifies the possibility of urinary bladder infection during utero-vaginal prolapsed. In such condition, clinician should also look into possibility of urinary bladder involvement and if left untreated results in delay in recovery due to persistant straining originating from irritation in the urinary bladder.

Keywords: primiparous buffalo, prolapse, endometritis, cystitis

INTRODUCTION

Buffaloes are the backbone of milk production in India, whose buffaloes account for more than 55% of the world population. Buffaloes are unique in many ways compared to other cattle in many aspects of animal health (Azawi, 2010). The reproductive performance in buffalo is poor due to various diseases of the reproductive system, including genital prolapse (Rao and Sreemannarayana, 1983; Akhtar et al., 2012). Prepartum vaginal prolapse is one of the major reproductive disorders in buffaloes (Azawi, 2010). It mostly occurs in the seventh month of pregnancy or later immediately after parturition (Sah and Nakao, 2003). Etiologic factors of prepartum vaginal prolapse in buffaloes may be attributed to nutritional imbalance (Kelkar et al., 1989; Ahmed et al., 2005), hormonal imbalance (Galhotra et al.,...
seasonal-managemental factors (Mishra et al., 1998; Gurcharan et al., 2003; Akhtar et al., 2010) and hereditary predisposition (Nanda and Sharma, 1982). The hormonal changes that occur during this last trimester of pregnancy, especially the increase of estrogen and the production of relaxin, cause a relaxation of the pelvic ligaments and surrounding soft tissue structures (Wolfe, 2009). Prepartum vaginal prolapse often terminate in uterine prolapse post-partum resulting from the influence of parturition. If infection is acquired, metritis or pyometra may result. The present communication reports a case of pre-partum vaginal prolapse which complicated into uterine prolapse and finally terminated in puerperal metritis-endometeritis and urinary bladder infection.

**CASE HISTORY AND CLINICAL OBSERVATIONS**

A Murrah buffalo aged about 3.5 years, primaparous and in the last month of gestation, was reported initially with the problem intermittent prolapse of the vagina, with the vagina most commonly protruding from between the vulva lips when the animal was lying down while recumbent. Vaginal prolapse later became aggravated in the course with vaginal mass prolapsed during standing posture while attempting to urinate or defecate or strain. After 20 days, the entire vagina prolapsed and clinical examination revealed swollen, edematous and congested vaginal mucosa with the visible cervix at the most caudal part of the prolapse. Animal parturated on day 25 with mild physical assistance during parturition and gave birth to viable male calf weighing 35 kg. Thw placenta (afterbirth) was discharged out without any physical assistance in due course of time. However, 4 days after parturition, straining resulted in utero-vaginal prolapse. In time this resulted in puerperal metritis and clinical endometeritis with discharge of cream colour pus from the vagina on rectal examination and massage of uterus. On rectal examination of the reproductive tract, the uterus was enlarged, flaccid, swollen and fluctuating on palpation. The condition relapsed even after manual repositioning and necessary treatment provided. Severity increased when buffalo attempted urination, defeation or lying down recumbent. As the duration of the prolapse increased, vascular compromise, trauma and fecal contamination resulted in contamination of the vaginal mucosa. The buffalo exhibited discomfort manifest by straining and frequent attempts to urinate and urine flow was turbulent (Figure 1 B). Clinical examination revealed a slight tear (Figure 1 A, marked with an arrow) on the vaginal mucosa near urethral opening with congestion, edema and foul smell. The clinical examination of vital indices revealed slightly elevated temperature ranging from 101.9°F to 103.2°F during the course of the day, accelerated heart rate and respirations. Fresh urine sample was examined using reagent strips (Q Dx Urine Test 11 Nicholas®) for urinalysis, indicating specific gravity 1.030, 2+ positive for leukocyte, proteinuria (1+) and pH (7.5).

**TREATMENTS AND DISCUSSION**

During the first indication of low grade vaginal prolapsed, the buffalo was treated with sodium salt of 4-dimethylamino-2 methylphenyl-phosphinic acid 0.2 gm (Tonophosphan® Vet Intervet®) injection 15 ml IM for 3 days and hydroxyprogesterone (Duraprogen® Vetcare®) Injection 2 ml (0.50 gm) by IM route for 3 days.
The buffalo was also provided with rear elevation support using straw bags. The animal showed signs of improvement but vulvar lip closure was complete. A decrease in progesterone concentrations has been reported (Zicarelli, 2000) in buffaloes suffering with vaginal prolapse. Successful progesterone therapy in pre-partum vaginal prolapse in buffaloes (Sah and Nakao, 2003) and cattle (Bhattacharyya et al., 2012) has been reported indicative of the role of low serum progesterone concentrations in causing pre-partum vaginal prolapse. After 20 days of treatment prolapse recurred with higher grade, showing prolapse of the vagina even when animal was in standing position and straining was moderate. No treatment was provided due to buffalo nearing expected date of delivery. Only a rope truss was applied for physical immobilization around the vulva. Similar management of prepartum vaginal prolapse using a rope truss has been reported by Veeraiah and Srinivas (2010). Higher incidence of genital prolapse was also observed in buffaloes having more than 8 months of gestation by Patidar et al. (2010). High incidence (around 43%) of prolapse has been reported in buffaloes (Samad et al., 1987). The buffalo gave birth to male calf after 25 days. Parturition was non-eventful except for slight manual assistance provided for removal of the calf. Follow up treatment was provided using Chromostat® (Adrenochrome Monosemicarbazone, Life Pharmaceuticals) 25 ml IM as haemostatic once, Lixen IU (Cephalexine) 60 ml intrauterine for 3 days, Replanta® powder (Indian Herbs®) 50gm as commercial indigenous preparation for uterine cleansing twice daily for 3 days, Melonex plus® (meloxicam 5 mg and paracetamol 150 mg per ml, Intas Pharmaceuticals®) as anti-pyretic and analgesic 25 ml daily in two divided doses for 3 days, strepto-penicillin Dicrystcin® 2.5 gm (Sharabhia Zydus) given as systemic antibiotic once daily by IM route for 5 days. Sood et al. (2011) also reported use of strepto-penicillin, meloxicam and calcium borogluconate for managing postpartum complications in buffalo. After 3 days of parturition, the buffalo started showing severe straining and this resulted in uterine prolapse. Uterine prolapse is more frequent in buffaloes in which vaginal prolapse is observed during pregnancy, particularly beyond the 7th month of gestation. Noakes et al. (2001b) also observed maximum number of such cases in the last 2 months of gestation. Forced extraction of the fetus has also been incriminated as an etiological factor (Noakes et al., 2001a). The prolapsed mass was first washed with potassium permanganate (1:1000) solution and urine was discharged using sterile stainless steel catheter and later the mass was manually repositioned and a jute rope truss was applied around the vaginal lip. Considering the possibility of contamination, the buffalo was treated with a broad spectrum antibiotic by the systemic route IM using Enroflaxacin 10% (Byrocin®, Bayer HealthCare) for 3 days and provided with an indigenous preparation of Prolapse-In (Cattle Remedies®) bolus 5 bolus twice daily for 3 days orally. Calcium and phosphorus was supplemented using intravenous slow infusion of 450 ml Mifex (Novartis®) once on the assumption that hypocalcium may be one the factor for the prolapse. Hypocalcaemia results in myometrial fatigue and delays cervical involution (Murphy and Dobson, 2002). There was appreciable improvement initially with decrease in straining and discharge of the placenta. However, again straining was observed while urinating, urine was disrupted and the animal tended to remain in urinating posture for some time after urination (Figure 1 B). Straining was suspected to result from infection of the uterus resulting from contamination of the prolapsed mass at the time of uterine prolapse and the systemic
Figure 1. Buffalo suffering from vaginal prolapse, endometritis and cystitis before treatment (A, B, C and D) and after treatment (E and F).
antibiotic provided was not able to suppress the infection. Discharge of pus on rectal examination indicated development of clinical endometritis (Figure 1 B, D). Raman and Bawa, (1977) also reported a high prevalence of postpartum infections (38.54%) in buffalo. Puerperal metritis treatment was attempted by intra-uterine douching with 60 ml of 5% Lugol’s iodine on alternate days for 3 days along with anti-allergic pheniramine maleate (Avilin®, Intervet India) 10 ml by IM route for 5 days and anti-inflammatory Melonex plus® (Meloxicam 5mg and Paracetamol 150 mg per ml, Intas Pharmaceuticals®) 25 ml daily in two divided doses for 3 days. Lugol’s iodine is most commonly used under field condition to treat endometritis. Besides the antiseptic activity, Lugol’s iodine causes local irritation of endometrium, releases prostaglandin and regresses ovarian corpus luteum. Postpartum metritis is one of the most important disorders in buffaloes (Azawi et al., 2008), causing high economic losses due to prolonged inter-calving intervals and cost of treatment (Esslemont and Peeler, 1993). The severity of condition decreased with thicker consistency and lesser pus discharge of rectal examination. The rope truss was also removed. However straining continued and endometritis persisted resulting in recurrent prolapse. Suspecting the possibility of urinary tract infection based on results of urine examination and clinical symptoms, the buffalo was treated with intra-urinary infusion of oxytetracycline hydrochloride (500 mg tablet Pfizer® dissolved in 60 ml pyrogen free water) into the urinary bladder using sterile A.I. plastic sheet for 3 days and systemic intravenous administration of broad spectrum antibiotic combination of ceftriazone 3,000 mg and tazobactam 375 mg (Vetazo® Zydus Animal Health Limited) for 3 days. Melonex plus® (meloxicam 5 mg and paracetamol 150 mg per ml, Intas Pharmaceuticals®) 25 ml was also administered by IM route daily in two divided doses as supportive anti-inflammatory therapy for 3 days. The buffalo responded well to this treatment and straining decreased after 2 days of treatment with proper urine flow and no pus discharge with uterine tonicity was observed on rectal examination. There was also improvement in the feed intake of the animal and milk production (Figure 1 E, F). The animal reportedly showed signs of heat 48 days after the last treatment and was successfully inseminated.

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