



Concurrent Occurrence of Hydrallanto-amnios in a Buffalo and its Clinical Management: A case report

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ABSTRACT

A 4-year old primiparous buffalo was presented with the stated history of prolonged gestation, inappetence and gradual bilateral abdominal enlargement since last 10-15 days giving a characteristic bloated bull frog appearance. General clinical examination revealed rectal temperature 101.4°F, pale mucous membrane but there was no evidence of straining. To investigate further, per rectal examination revealed a taut uterus (bulged, tense and inelastic) with palpable placentomes whereas fetal parts were inaccessible. Per-vaginal examination revealed a soft cervix without any advancement of fetal parts into the pelvic inlet. Based on characteristic clinical observations ultrasonography (USG) was recommended which revealed an enlarged fluid filled uterus with speckled appearance. The characteristic signs and USG results were suggestive of hydrops of fetal membranes. Animal was stabilized with sufficient intravenous fluids and was followed by cervical dilation therapy for expulsion of fetus. Upon gradual dilation of cervix, trans-cervical allantocentesis was performed to remove allantoic fluid, with simultaneous infusion of intravenous fluids to prevent hypovolemic shock, which was performed over a period of three hours. A dead male monster fetus was extracted per vaginally. The presence of large quantity of allantoic and amniotic fluid, monster fetus as well as characteristic placental lesions confirmed that it was a case of concurrent hydrallantois and hydramnios. The supportive treatment included intravenous fluid, parental antimicrobial agent, anti-inflammatory drugs, vitamins and antioxidants. The treatment regimen was followed up for 5 days and animal was recovered uneventfully.

Keywords: Hydrallantois, Hydramnios, Buffalo, Gestational disorder, Monster fetus

The dropsical conditions of fetal membranes like hydrallantois and hydramnios occur in 1 out of 7500 bovine pregnancies (Jackson, 1995), with the incidence of hydramnios being 9 to 15 times less than hydrallantois (Jackson, 1995; Drost, 2007), but occasionally a simultaneous hydrops-allantois and hydrops-amnios occur in the same animal (Ducommun, 1967). Hydramnios develops due to autosomal recessive gene

(Leipold and Dennis, 1980; Harper *et al.*, 1998) whereas hydrallantois usually develops due to defective fetal membranes (Roberts, 1971; Long S, 2009). Normally, amniotic fluid is secreted by the fetal salivary glands, nasopharynx, skin and other associated structures, and this volume is regulated through fetal deglutition (Zdunczyk and Grunert, 1999).



The development of hydramnios is associated with fetal malformations such as anencephaly, schistosoma and chondrodystrophy that prevents fetus from swallowing of amniotic fluid (Sloss and Dufty, 1980; Morrow, 1986). Also, fetal head anomalies like shortened upper jaw, prolonged lower jaw (prognathism) might lead to impaired swallowing and thereby gradual increase in amniotic fluid in cattle and buffaloes (Harper *et al.*, 1998; Christopher, 2000). In hydrallantois, accumulation of allantoic fluid is due to placental abnormalities and possible interference with sodium metabolism at the cellular level (Jackson, 1980) which alters the homeostasis between allantoic fluid and maternal circulation. Age of the cow is of little importance in the incidence of hydrops of fetal membranes (Ducommun, 1967). In hydramnios placenta will be usually normal, and a gradual accumulation of amniotic fluid is seen during the later half of pregnancy (Drost, 2007) and amniotic fluid can go up to ~25 L (Arthur, 1969). Here, we report a case of concurrent occurrence of hydrallantois and hydramnios associated with fetal monstrosity and also defect in placental membrane in a primiparous buffalo.

Clinical history and observations

A 4-year-old primiparous buffalo presented at Referral Veterinary Polyclinic – Teaching Veterinary Clinical Complex of the institute with the stated history of prolonged gestation, inappetance and gradual bilateral abdominal enlargement since last 10-15 days. Initial visual examination revealed stressful animal with open mouth breathing (Fig. 2) and a characteristic bloated bullfrog appearance (Fig. 1). General clinical examination revealed rectal temperature 101.4°F, pale mucous membrane but there was no evidence of straining. On visual examination, animal appeared to suffer from ventral herniation of abdominal contents, with consequent loss of udder outline due to the excess accumulation of fluids in uterus. This suggested a possible rupture of the prepubic tendon. To investigate further, per rectal examination revealed a

taut uterus (bulged, tense and inelastic) with palpable placentomes whereas fetal parts were inaccessible. Per-vaginal examination revealed a soft cervix with intact cervical seal without any advancement of fetal parts into the pelvic inlet. Based on characteristic clinical observations ultrasonography (USG) was recommended which revealed an enlarged fluid filled uterus with speckled appearance (Fig. 3). The characteristic signs and USG results were suggestive of hydrops of fetal membranes.

TREATMENT AND DISCUSSION

Animal was stabilized with fluid therapy by infusing normal saline (NS) 5 liters, dextrose normal saline (DNS) 5 liters and ringer lactate (RL) 5 liters over a period of 6 to 8 hours. Cervical dilation therapy was induced with Epidosin® (Valethamate bromide – TTK, India) @ 80 mg IM, Pregheat® (Estradiol benzoate – Virbac, India) @ 2 mg IM, Vetmate® (Cloprostenol sodium – Cargill, India) @500 µg IM and Dexona® (Dexamethasone – Zydus, India) @ 40 mg IM. The prophylactic treatment consisting of antimicrobial Quintas® (Enrofloxacin – Intas, India) @ 2.5 mg/kg body weight IM and non-steroidal anti-inflammatory drug (NSAIDs) Melonex® (Meloxicam – Intas, India) @ 0.05 mg/kg body weight IM were given with the cervical dilatation therapy.

Repeated per vaginal examination at the interval of about 4-5 h following the cervical dilatation therapy revealed that after 5 h of therapy, there was two fingers cervical dilatation and about 20 h later cervix was completely dilated. About 10-12 h after the cervical dilatation therapy, trans-cervical allanto-centesis was performed to remove large quantity of allantoic fluid, with simultaneous infusion of intravenous fluids to prevent hypovolemic shock. The perforation of allantoic membrane was made using finger and around 80 to 100 L of allantoic fluid mixed with amniotic fluid came out over a period of 60 to 90 minute. However, when animal sat down, large quantity of amniotic fluid (~ 30 L) came out.



Fig. 1: Bloated bullfrog appearance of the buffalo



Fig. 2: Open mouth breathing of buffalo due to pressure on thoracic cavity

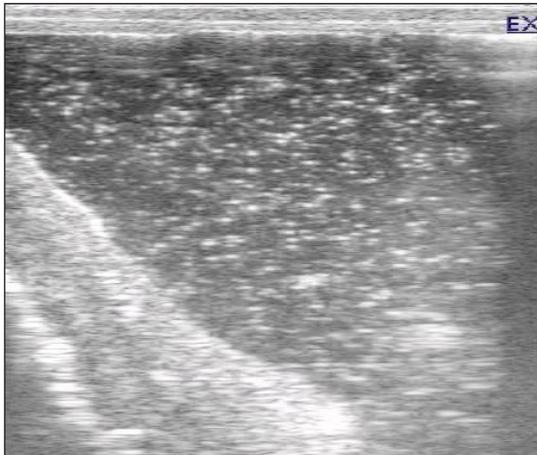


Fig. 3: Speckled appearance of the uterine fluid



Fig. 4: Gushing discharge of syrupeous amniotic fluid

The signs of dyspnea receded and the animal was casted on lateral recumbency and a dead male monster fetus with cleft palate, harelip, prognathism and other congenital abnormalities was delivered per vaginally by applying three-point traction. As the uterus was situated deep in the herniated abdomen, placenta couldn't be expelled normally thus fetal membranes were removed manually and found to contain reduced number of enlarged and edematous cotyledons, with necrosed inter-cotyledonary areas. The presence of large quantity of allantoic and amniotic fluid, monster fetus as well as characteristic placental lesions confirmed that it was a case of concurrent hydrallantois and

hydramnios. Following the delivery of the dead monster fetus, intrauterine cleanser Cleanex[®] (Urea, Nitrofurazone, Metronidazole & Povidone iodine – Merial, India) 4 boli OD for 3 days with antimicrobial agent Intaceff[®] 4 gm (Ceftriaxone – Intas, India) @ 10 mg/kg body weight IM OD for 5 days, NSAID Megludyne[®] (Flunixin meglumine – Virbac, India) @ 2.2 mg/kg body weight IM OD for 5 days, antioxidant Ascorvet[®] (Ascorbic acid – Phoenix, India) @ 20 ml IM OD for 5 days, oral uterine cleanser Uterotone[®] (Indigenous uterine cleanser- Cattle remedies, India) @ 100 ml PO OD for 5 days along with intravenous fluid therapy were given. The next day animal started taking feed and water normally, rumination



was restored and the fluid accumulation in ventral abdomen was reduced significantly. The treatment regimen was followed up for 5 days. The owner was advised to provide ad-lib water, energy supplements, laxative feed (preferably boiled), green grass and provision for clean bedding. The owner was informed about the questionable future breeding prognosis of the animal, a common prognosis of ruptured prepubic tendon. The animal was discharged upon uneventful recovery.

The external and trans rectal observations including bloated bullfrog appearance (Fig. 1), failure to ballot the fetus trans abdominally with palpation of placentomes with inaccessible fetus per rectally and characteristic placental lesions were suggestive of hydrallantois. However, the ultrasonography revealed speckled appearance of the fetal fluid and large quantity of amniotic fluid along with delivery of monster fetus with multiple congenital abnormalities was suggestive of hydramnion. As characteristics of both amniotic and allantoic fluids differ substantially from (Wintour *et al.*, 1986), with the allantoic fluid being watery, clear and amber colored transudate similar to fetal urine, whereas the amniotic fluid being a lubricant having a mucoidal, viscid and syrupy consistency (Jackson, 1995 and Drost, 2007). In this case the gross appearance of fetal fluid was amber colored, mucoid and was viscid, which further confirmed the presence of both hydramnios and hydrallantois. The presence of multiple congenital defects in the fetus (cleft palate, hare lip and prognathism) which probably impaired swallowing leading to imbalance in amniotic homeostasis confirmed the hydramnios condition and is in agreement with findings of (Jackson, 1995). At the same time the characteristic placental lesions (reduced number of enlarged and edematous cotyledons, necrotic lesions and degenerative changes) leading to formation of adventitious placenta (Drost, 2007) might be responsible for the hydrallantois condition.

Hydramnios may also occur subsequent to

other coincidental abnormalities like atresia of oesophagus, pituitary hypoplasia and anencephaly where the accumulation of cerebrospinal fluid leads to impaired swallowing (Jackson, 1995). The hydronephrosis of fetal kidney may lead to polyuria, which may also cause excessive accumulation of fluid inside the allantoic cavity (Palanisamy *et al.*, 2014). In hydrallantois, placental abnormalities possibly interfere with sodium metabolism at the cellular level thus leading to rapid accumulation of allantoic fluid (Jackson, 1980). Respiratory distress may occur due to the pressure imposed on the diaphragm by the increased fetal fluids, which later subsided following drainage of excessive fetal fluid. The shifting of fluid from the interstitial space to hydroptic cavities might be responsible for dehydration, sunken eye ball, dullness and depression. The excessive stretching of the abdominal wall resulted due to the fluid accumulation in uterus and after drainage of the uterine fluid and extraction of fetus, the animal appeared emaciated. Hydrallantois and hydramnios must be differentiated from intestinal obstruction, ascites, rupture of bladder, abdominal masses like tumor, abscess or fat necrosis, rumen tympany, extensive ventral edema, hydrometra and multiple fetuses (Morin *et al.*, 1994).

The extended gestation length might be due to the congenital absence of pituitary gland, which would impair the initiation of parturition pathway (by release of fetal cortisol in response to ACTH). In the present case complete dilatation of cervix achieved between 20-22 hours after commencement of treatment. These observations were in line with previous findings (Pandey *et al.*, 2014; Manokaran *et al.*, 2016).

CONCLUSION

It is concluded that the hydrops of fetal membranes is a serious obstetrical complication and can be life threatening as well. The dropsical conditions of fetal membranes including both hydrallantois and hydramnios



can also occur concurrently. The excessive accumulation of fluid in the uterus can cause stretching of abdominal wall and may lead to rupture of prepubic tendon which makes the future breeding life of animal questionable. The initiation of parturition process is impaired in dropsical conditions due to inability of animal to contract so cervical dilatation therapy is a suitable method to initiate parturition process. As the sudden drainage of fetal fluids can lead to hypovolemic shock so it is better to simultaneously infuse intravenous fluids followed by slow drainage of fetal fluids.

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