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**Satish**

College of Veterinary and Animal  
Science, Rajasthan University of  
Veterinary and Animal Sciences,  
Navania, Udaipur, Rajasthan,  
India

**Dinesh Jhamb**

College of Veterinary and Animal  
Science, Rajasthan University of  
Veterinary and Animal Sciences,  
Navania, Udaipur, Rajasthan,  
India

**Surendar Singh Nirwan**

College of Veterinary and Animal  
Science, Rajasthan University of  
Veterinary and Animal Sciences,  
Navania, Udaipur, Rajasthan,  
India

**Devender Kumar**

College of Veterinary and Animal  
Science, Rajasthan University of  
Veterinary and Animal Sciences,  
Bikaner, Rajasthan, India

**Mitesh Gaur**

College of Veterinary and Animal  
Science, Rajasthan University of  
Veterinary and Animal Sciences,  
Navania, Udaipur, Rajasthan,  
India

**Correspondence****Satish**

College of Veterinary and Animal  
Science, Rajasthan University of  
Veterinary and Animal Sciences,  
Navania, Udaipur, Rajasthan,  
India

## A rare case of hydroallantois in buffalo and Arthrogryposis, evisceration of abdominal content from umbilicus in a calf: A case report

**Satish, Dinesh Jhamb, Surendar Singh Nirwan, Devender Kumar and Mitesh Gaur**

**Abstract**

A 10-year-old pluriparous buffalo with full term pregnancy was presented with the history of sudden bilateral enlargement of abdomen in previous 20-25 days with progressive anxiety, difficult breathing and unable to sit on its own. Based on history, symptoms and clinical observations, the case was diagnosed as hydroallantois. The animal was treated with synthetic PGF<sub>2α</sub> Inj. Cloprostenol 500µg was given intramuscularly along with dexamethasone 60mg. successfully delivery of a monster fetus (arthrogryposis) in a hydroallantois buffalo.

**Keywords:** Hydroallantois, arthrogryposis, buffalo, monster fetus

**Introduction**

Hydroallantois is one of the sporadic gestational disorders of dairy animals in which sudden increase in allantoic fluid occurs in allantoic cavity due to pathology of foetal membrane leading to bilateral enlargement of abdomen during late gestation (Roberts, 1971) [17]. Hydrallantois is usually considered as maternal abnormality, where the rapid and abnormal distention of abdomen occurs (Drivers and Peek, 2008) [4] due to rapid accumulation of watery, amber color fluid inside the allantoic cavity over a period of 5 to 20 days in late gestation and is always giving suspicion for twin/triplet pregnancy (Morrow, 1986) [10]. It accounts for about 80-90 percent of uterine hydrops and is characterized by a rapid and excessive accumulation of watery, amber coloured fluid inside the allantoic cavity over a period of 5 to 20 days giving suspicion for twin/multiple pregnancy (Sloss and Dufty, 1980; Morrow, 1986; Selvaraju *et al.* 2012) [20, 10, 18]. This condition invariably results in fetal gestational accident owing to placental dysfunction and fetal kidney failure (Arthur *et al.*, 1989; Jana and Ghosh, 2012) [1, 6]. Roberts (1971) [17] stated that this dropsical condition usually affects both fetus and fetal membranes. Hydrallantois is usually treated by terminating the pregnancy using prostaglandin F<sub>2α</sub> and corticosteroids (Manokaran *et al.* 2011) [8] but the sudden removal of allantoic fluid leads to hypovolemic shock and collapse of the animal (Peiro *et al.* 2007) [15]. The slow and continuous removal of allantoic fluid may be an alternative method to avoid shock to the animal (Noakes *et al.* 2009) [11]. Hydroallantois or hydrops of the allantois is the single factor present in 85 to 90 per cent of the dropsical conditions affecting the bovine fetus and its membrane (Peek, 1997) [14]. It is usually seen sporadically in dairy and beef cattle. It is usually associated with a diseased uterus in which most of the caruncles in one horn are not functional and rest of the placentomes are greatly enlarged and possibly diseased (Roberts, 1971) [17]. Hydroallantois is one of the gestational disorder in which sudden increase in allantoic fluid occurs in allantoic cavity due to foetal membrane pathology leading to bilateral enlargement of abdomen (Roberts, 1971) [17]. This is more common last phase of third trimester in dairy and beef cattle and less so in buffaloes and heifers (Srinivas and Sreenu, 2006) [21].

**Case history and observation**

An 10-year-old pluriparous buffalo with full term pregnancy was presented from Chittorgarh district at 1 pm in VCC of College, of Veterinary and Animal Science Navania (Udaipur) with the history of sudden bilateral enlargement of abdomen in previous 20-25 days with progressive anxiety, difficult breathing and unable to sit on its own (figure 1). Initially the case was treated as a bloat by a local quack without success from last seven days.

When presented the buffalo was found dull and depressed with sunken eyes, dry muzzle, anxiety, shallow aboured respiration, and congested mucous membranes but with slightly high body temperature and bilateral heavy distension of abdomen. The pulse rate, respiratory rate and rectal temperature were 108/min, 45/min and 102.5 °F, respectively. Per-rectal examination revealed highly distended fluid filled uterus occupying most of the pelvic and abdominal cavities. No fetus could be palpated per rectally fremitus was very sluggish and placentomes were not palpable. Ultrasonography revealed black coloured anechoic image. Vaginal examination revealed closed cervix. Based on history, symptoms and clinical observations, the case was diagnosed as hydroallantois, and it was decided to induce parturition with medical management.



**Fig 1:** A case of hydroallantois in buffalo

**Treatment**

After clinical examination, initially the animal was treated with synthetic PGF<sub>2</sub>α Inj. Cloprostenol 500µg (Repregna Vet Inj, Mankind Pharma LTD) was given intramuscularly along with dexamethasone 60 mg. Two litres of DNS 5%, 2 liters Ringle lactate, 1 liters DNS 25% (Intalyte) and Inj. Ceftriaxone 3gm (Intas Pharma) intravenously was also given BID. Animal examine per-vaginally morning and evening interval, in next day evening cervix dilation start and the sticky fluid started flowing out from the vagina (figure 2).



**Fig 2:** Animal became recumbent, feeling discomfort with laboured breathing and gasping, cervix dilation start and the sticky fluid started flowing out from the vagina

Animal became recumbent, feeling discomfort with laboured breathing and gasping. By inserting hand per vaginally and

throbbing the index finger the allantoic sac was punctured. The watery, amber coloured, non-sticky allantoic fluid started gushing out in a jet flow. About (17 bucket of fluid, 1 bucket = 16 liters) 250 to 272 litres of fluid was drained out from the allantoic sac over a period of 2 to 3 hours resulting into complete collapse of abdomen. To avoid the complication of hypovolemic shock 6 litres of dextrose normal saline (5%), 5 litres of Ringer’s lactate, 1 liters DNS 25% (Intalyte), 4 litres of normal saline, 600 ml Inj metronidazole and 450 ml calcium borogluconate was administered intravenously. For uterine contraction given inj. oxytocin 75 IU intramuscular. Palpation of a dead fetus was now possible in the collapsed thickened lathery allantoic sac. After complete removal of allantoic fluid, a dead male monster foetus was delivered in posterior presentation manually after correcting the postural defects (figure 3).



**Fig 3:** A fetal monster after delivery

In post parturient supportive therapy given 2 litres of DNS 5%, 2 liters Ringle lactate, 1 liters DNS 25% (Intalyte) and Inj. Ceftriaxone 3gm (Intas Pharma) intravenously and inj. Meloxicam 150 mg (Melonex, Intas Pharma), inj. chlorpheniramine maleate 10 ml, inj liver extract (Belamyl) 10 ml was administered intramuscular and Feraboli 4 (Furazolidone and urea, Pfizer) were placed intrauterine. The same treatment was continued for next 5 days. The animal recovered uneventfully, started taking feed and water normally and hence was discharged from clinic after five days.

**Description of the fetal monster**

When per-vaginally fetus examine, the fetus in posterior presentation with contracted hind-limb in fully dilated cervix apply mutation technique and delivered a dead male monster. Gross finding in fetus contracted both hind limb and fore limb, the condition correlate with arthrogryposis and second condition also seen a herniation of umbilicus exposing fetal abdominal viscera, the condition match with schistosomus reflexus but there is no actual angulation of vertebral column and third condition was a parrot mouth of fetus (upper jaw more in length than lower jaw). Characteristic findings of the monster recorded in this study were somewhat similar to that of schistosomus reflexus. However, classical schistosomus reflexus is a developmental defect characterized by a marked ventral curvature of the spine, deformed pelvis and the body and chest walls bent laterally with exposed thoracic and abdominal viscera (Roberts, 2004) [16]. Arthrogryposis is a musculoskeletal deformity frequently encountered as a congenital disease (Leipold *et al.*, 1996) [7] and is reported in man, farm animals and pets. In this case, contraction of fore limb and hind limb were reported describe as arthrogryposis (figure 3).

## Discussion

In hydroallantois, accumulation of allantoic fluid is rapid due to placental abnormalities and possible interference with sodium metabolism at the cell level (Jackson, 1980) [5]. Hydrallantois is the single pathological condition present in 85 to 90% of dropsical conditions in the bovine (Youngquist and Threlfall, 2007) [22]. The cause of hydrallantois is not certain. Hydroallantois could usually be associated with a diseased uterus in which most of the caruncles in one horn were not functional and atrophied and rest of the placentomes were enlarged, edematous and possibly diseased which led to formation of adventitious placenta (Drost, 2007) [4]. Hydrallantois is excessive accumulation of fluid in the allantoic sac. It may result from abnormal functioning of the placentomes due to inadequate numbers of caruncles and development of adventitial placentation (Maxie 2007) [9]. Sometimes, the adventitious placentae are formed due to congenital lack of maternal caruncles (Roberts, 1971) [17]. Sudden increase in the intrauterine fluid imposed pressure over diaphragm resulting in respiratory distress. In present case initiation of parturition, started between 18-26hr after commencement of treatments. These observations were in line with those of Pandey *et al.* (2014) [13]. The interstitial fluid of tissue or cell to cavity might have been responsible for dehydration, sunken eye, dullness and depression. The hydronephrosis of fetal kidney could result in polyurea, which may also cause excessive accumulation of fluid inside the allantoic cavity (Palanisamy *et al.* 2014) [12]. The treatment of hydrallantois required accurate approach and precision of decision. In all the cases of hydrallantois, progressive distension of abdomen was observed due to excessive accumulation of allantoic fluid. This might lead to serious strain on the animal which eventually causes loss of condition and recumbency. Further if it was allowed to continue, it would end in fatal to dam (Noakes *et al.* 2009) [11]. Cases that have become recumbent should be slaughtered (Roberts, 1971) [17]. In affected but non recumbent animals, the strain on the animal could be relieved by terminating the pregnancy or by cesarean section (Noakes *et al.* 2009) [11]. With both the methods it was imperative that the fluid should be allowed to escape slowly so as to prevent the cesarean of hypovolemic shock associated with splanchnic pooling of blood. Various methods to induce parturition in cattle suffering from hydrallantois were reported in the literature including use of natural or synthetic prostaglandin F<sub>2α</sub> preparation (Manokaran *et al.* 2011) [8] and estrogen preparations (Sharp *et al.* 1978, Peiro *et al.* 2007) [19, 15]. In the present, double dose of cloprostenol (prostaglandin F<sub>2α</sub>) was used which helped for successful termination of pregnancy. Sudden increase in the intrauterine fluid imposed pressure over diaphragm resulting in respiratory distress. In present case initiation of parturition, started between 18-26hr after commencement of treatments. These observations were in line with those of Pandey *et al.* (2014) [13]. The hydronephrosis of fetal kidney could result in polyurea, which may also cause excessive accumulation of fluid inside the allantoic cavity (Palanisamy *et al.* 2014) [12]. It has been reported in cattle carrying twin fetuses and is associated with diseased uterus in which caruncles are not functional and rests of the placentomes are enlarged and diseased. However, in these cases fetuses are usually slightly smaller than normal and show some oedema and ascites (Roberts 1971) [17]. Hydrallantois with fetal monstrosity was reported in ewe

(Battacharyya *et al.* 2012) [2]. In the present case, a dead foetus with three different condition (arthrogryposis, parrot mouth, exposing of abdominal viscera through umbilicus) was removed along with placenta after drainage of allantoic fluid per vaginum as the cervix was fully dilated following treatment. Inj. dexona and hydrotherapy was administered to prevent the hypovolemic shock due to rapid drainage of fluid, while rest of the treatment was done symptomatically. Hydrallantois can easily be diagnosed by rectal palpation in bovine with the findings of distorted uterine horn and no palpation/balottement of fetus and placentomes but this is not possible in small ruminants (Roberts 1971) [17]. Ultrasonography can be a very useful alternative to diagnose the condition. Moreover, rapid abdominal enlargement in last 20-25 days with round distended and tense abdominal wall are characteristic features of hydrallantois which was also noticed in the present case. Occurrence of metritis following removal of fetus and allantoic fluid was also reported earlier in cattle (Roberts 1971) [17]. Previous report indicated non-occurrence of retained fetal membrane and septic metritis in ewe suffering from hydrallantois (Peiro *et al.* 2007) [15].

## Conclusion

Cases of hydroallantois carrying a monster fetus is more complicated than only a hydroallantois. Early diagnosis is always very important to save the life of dam. It is universal truth to maintain the fluid therapy for shock before puncture the water bag. Further therapeutic approaches play key role for favourable prognosis. Hydroallantois with fetal monster condition rarely reported by researches that was also involved in dystocia.

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