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Dystocia due to dicephalus tetrabrachius tetrapus ischiopagus and dicaudatus monster in cattle: A case report

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Abstract
A pluriparous Holastin cross cow gave birth to a rare case of conjoined twin monsters Dicephalus Tetrabrachius Dipus Sternopagus and Dicaudatus) via vaginal delivery. The two female fetuses that made up the twin monster each had two heads, two pairs of forelimbs that were conjugated with the sternal area, two pairs of hindlimbs, and two tails.

Keywords: Cattle, Dicephalus tetrabrachius tetrapus sternopagus monster

Introduction
When the conceptus is subjected to maternal and genetic factors during the early stages of cell development, the majority of abnormalities arise. On the thirteenth day after conception, the embryonic disc begins to differentiate. The twins will share bodily components in addition to their chorion and amnion if the split happens beyond day 13 (Finberg, 1994) [8]. Varying degrees of fusion occur; Duplication of cranial part of the fetus is more common than of the caudal parts (Roberts, 2004) [22] in ruminants and swine (Arthur *et al.*, 2001) [1]. A congenital defect is an anomaly in structure or function that is present from birth. It can impact one or more systems as a whole, a portion of several systems, or both a structure and a function. (Marrow, 1980) [15]. The separate anterior duplication was present and cause dystocia in buffaloes (Singh *et al.*, 2013; Gangwar *et al.*, 2015; Dholpuria *et al.*, 2016) [28, 9, 6]. These duplications may arise during the primitive streak elongation or regression (Noden and Lahunta, 1984) [16]. Conjoined twins develop after the development of embryonic plate (Whitlock *et al.*, 2008) [32]. The twin kinds vary depending on the location of fusion or non-separation *viz*. thoracopagus (40%), omphalopagus (33%), pyopagus (18%), cephalopagus (2%) and ischiopagus (2%) (Fernando 1993) [7]. Nonetheless, the key recognised causative agents include viral infection of the foetus, consumption of toxic chemicals by an expectant animal, vitamin insufficiency, genetic variables, and/or a mix of these (Sharma *et al.*, 2010) [25]. In cows, anomalous embryonic duplications that give rise to conjoined twins are uncommon (Singh and Pandey, 2013) [29]. Compared to other farm animals, the frequency of dystocia is highest in cattle and buffalo (Purohit *et al.*, 2011) [19]. Monster-induced dystocia is often treated by a caesarean section, as fetotomy is only beneficial in a few cases. It may be difficult for monsters to pass through the birth canal, either because of their altered shape or because of their relative size (Dholpuria *et al.*, 2016) [6]. Any fetal defect such as fetal monster may result in distortion of body configuration and can become a reason of dystocia in bovines (Shukla *et al.*, 2007 and Kumar *et al.*, 2014) [26, 14]. This communication reports a rare case of dystocia caused by a conjoined twin (Dicephalus Tetrabrachius Diapus sternopagus and Dicaudatus) which was delivered per-vaginum in female cattle.

Case history and clinical observations
A full-term Holastin cross breed cattle about six and half years old in her third parity with dystocia was brought to the Department of Veterinary Gynaecology Obstetrics, RAJUVAS, Bikaner.

It had a history of straining for the previous 4 to 5 hours but had been unable to delivered the fetus, after that call veterinarian and he was not get success. The gestation period was complete, water bags had been ruptured and two hind limb of fetus come from vulva. On gyaneco-clinical examination after proper lubrication it is revealed fully dilated cervix, fetus was found in posterior presentation, dorso-sacral position and had one tail. After full hand insertion in pelvic cavity was found two other hind limb and tail also present. At the time we were suspect twins and pushed the one pair's hind limb of one fetus which was near to the pelvic brim. The traction applied on other fetus hind limb was hanging from vulva. But not got any success and fail to delivery of cattle. After re-examination we observed that another fetus both hind limb was also come near to internal os of cervix. At the time, we were suspect and might be monster condition. After that gentle traction applied on four hind limb and found thorax region was attached to each other. At time we were sure about that case fetus was monster, than lubricated the complete monster and traction apply in different direction with frequent examination. After that we get success and delivered female monster fetus per- vaginally. Thereafter, cattle were administered with fluids, antibiotics and NSAIDs etc as dystocia cases.

Morphological and Anatomical Description

Detailed Morphological examination, of the fetuses reveled that double head, double trunk, two pair of fore limbs, double thorax, two pair of hind limbs and two tail but conjoined from sternum region (Fig. 1). The development of female conjoined twins was nearly complete. The twin was separate double head and neck (Dinocephalic) with normal eyes and ears. The twins were fused from sternum regions (sternopagus), and had four fore legs (Tetrabrachius), four hind legs (Tetrapus) and two separate tails (Dicaudatus). The monster had one normal anus opening and other was absent (atresia ani). The condition could be classified as a dicephalus tetrabrachius tetrapus sternopagus and dicaudatus twin monster. The monster weighed 32.7 kg.

On Anatomical examination, externally conjoined fetuses had two head separate with neck, four fully formed forelimbs, four fully formed hind limbs and two tail. The thoracic girth diameter of monster was 66 cm. On post mortem, both fetuses' ribs was fused each other and form common thoracic cavity with common diaphragm. Both fetuses had separate pharynx and larynx with separate trachea for each lungs was present but one was normal and other is ill defined (Fig. 2). Each conjoined fetus had a separate abdominal cavity with separate vertebral colum up to the coccygeal vertebra. In digestive system, well developed liver lobes was present in one fetus but other fetus lobes was fused and ill developed, two spleen one is ill developed other is developed, stomach and intestine was present but one is ill defined. The urinary tract was symmetrically divided with two pair of kidney. Urinary bladder and genital tract was ill defined in one fetus than other and unable to trace completely but well developed two ovary pair was present. The atresia ani condition was found in one fetus. Radiographically, two different skeletons with separate vertebral colum was visible with clear fusion of some ribs at thoracic region in the monster (Fig. 3).

Treatment and Discussion

Dicephalus monsters have been reported in buffaloes (Chauhan and Verma 1995., Raju *et al.*, 2000, Bugalia *et al.*, 2001; Srivastva *et al.*, 2008; Gangwar *et al.*, 2015; Dholpuria *et al.*, 2016) [4, 21, 2, 30, 9, 6] and cows (Chandrahasan *et al*., 2003; Patil *et al.*, 2004; John Abrahan *et al*., 2007) [3, 17, 12]. Approximate similar type of monster was reported in buffaloes by Jerome *et al*. (2010) [11], Singh *et al*. (2013) [28], Gangwar *et al*. (2015) [9], Dholpuria *et al*. (2016) [6], and in cattle by Periyannan *et al*. (2021) [18] having duplication of all body parts. Dystocia resulting from conjoined twin monsters (Selvaraju *et al.*, 2002) [24] and dicephalus thoraco-sternopagus siamese monsters (Sahu and Pandit, 1999) [23] have been documented as uncommon instances in cattle and buffaloes (Periyannan *et al.*, 2021) [18]. A germinal region whose body structure is partly but not entirely duplicated gives birth to a thoraco-sternopagus twin during embryonic duplication (Robert, 1971). Dystocia due to conjoined twin monsters, though uncommon, has been reported earlier in buffalo (Urankar *et al*., 1994; Dhami *et al*., 2000; Jasmer *et al.*, 2016) [31, 5] and in cow (Honnappagol *et al*., 2005) [10]. The routine post operative care to the animal was carried with antibiotics, analgesics and fluid therapy along with ecbolics for five days.

Fig 1: Dicephalus Tetrabrachius Tetrapus Ischiopagus and Dicaudatus Monster in cattle

Fig 2: Developed and ill developed spleen and lung of monster in cattle

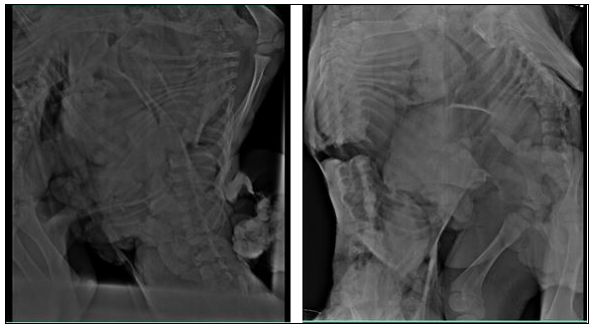

Fig 3: Digital radiograph of Monster showing fusion of ribs

Conclusion

Compared to other species, fetal monsters are comparatively more frequently seen in cattle and buffalo. Numerous causes, impacted by both genetic and environmental factors, may lead to conjoined twins**.** The current case report appeared to be duplication of the various body part portions.

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