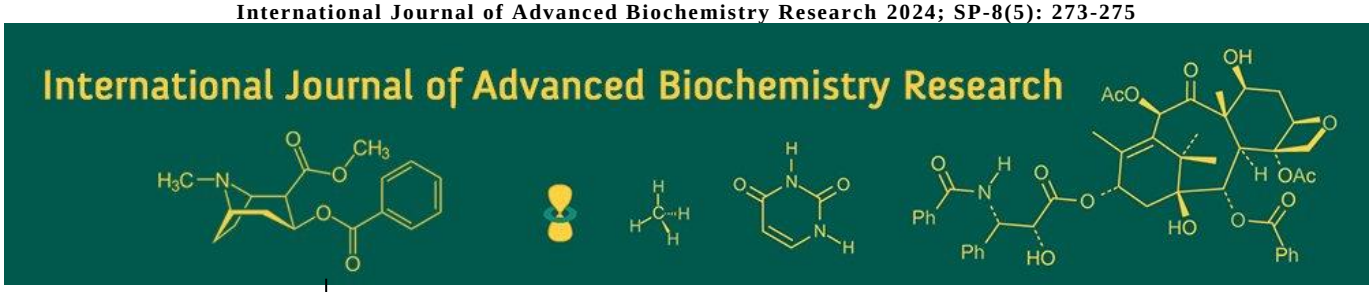

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Management of dystocia due to fetal hydrocephalus and Schistosomus Reflexus in a black Bengal goat: A unique case report of multiple Monsterism conditions

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Abstract
A cesarean section was performed on a pregnant doe that had a dead fetus displaying hydrocephalus and *Schistosomus reflexus.* Dystocia can be caused by fetal or maternal factors, and while the exact cause of these congenital defects is unclear, they may be due to genetic or environmental factors. Treatment for such monstrosities usually involves fetotomy or cesarean section. This is a unique report as there are no other reports available with both *Schistosomus reflexus* and hydrocephalus in a single fetus. Post-operative treatment after cesarean section involved administering calcium borogluconate, dextrose saline, meloxicam, dexamethasone sodium, and antibiotics.

Keywords: Multiple Monsterism, hydrocephalus, *Schistosomus reflexus*, cesarean section

Introduction
When an animal exhibits widespread deformity, it is referred to as a monster (Roberts S J., 1971) [13]. Hydrocephalus is a condition where there is an abnormal buildup of fluid in the brain, which can cause swelling of the skull. This fluid buildup can occur within the ventricles of the brain or between the brain and the protective covering around it, called the dura mater. Hydrocephalus can affect all types of animals, but is most commonly seen in pigs, puppies and calves. In severe cases, the cranial bones become significantly thin (Noakes D.E *et al*., 2001) [12]. *Schistosomus reflexus*, also a rare and deadly congenital disorder in goats, is a severe form of abdominal hernia linked to skeletal defects (Roberts S J., 1971) [13]. Its primary characteristics include acute angulation of the vertebral column (reflexus) and exposed abdominal and occasionally thoracic viscera (Schistosomus) (Dennis and Meyer, 1965) [3]. This report details a rare case study of a Black Bengal goat with dual monsterism, featuring *Schistosomas reflexus* and hydrocephalus.

Case history and clinical observation
A primipara female goat weighing around 20 kg was taken to the clinics of TVCC, CVSc and AH, RK Nagar. The goat had a history of retained placenta and had given birth to a normal dead fetus the previous day. The goat's rectal temperature was normal i.e. 101.5 degree Fahrenheit, there was a foul-smelling and reddish discharge coming out from her vagina. On vaginal examination, it was found that the goat had a dead and bloated fetus in her uterus, which was in a transverse position. It was impossible to correct the position of the fetus, hence a cesarean section was performed to relieve the dystocia.

Treatment and discussion
The operation site was selected and left flank region was shaved and cleaned thoroughly. Inverted L-block anaesthesia was given with a 10 ml injection of Xylocaine 2 percent [(containing Lignocaine Hydrochloride) (company name- Zydus Cadila)] at the operation site. Then the cesarean section was performed and the annormal fetus was removed.

The uterus was thoroughly cleaned with 500 ml of 0.9 percent normal saline solution and 100 ml of Metrogyl solution [(containing Metronidazole 500 mg/100 ml) (company name - J B Chemicals & Pharmaceuticals Ltd)] before placing two Furex bolus [(Containing Nitrofurazone – IP 60 mg & Urea IP – 6 gm) (Company name- Vetsfarma Ltd)] and one Steclin Bolus [(containing Tetracycline Hydrochloride bolus USP 500 mg) (company name- Zenex AH)] inside the uterus for better involution and to reduce microbial growth. Finally, the uterus was closed with Lambert suture technique and the peritoneum and muscle layers were sutured with a simple continuous suture technique with size 1 chromic catgut. The skin was also closed using an interrupted mattress suture technique by Mersilk number size 1. Post-operative treatment involved administering inj. Calborol -60 ml intravenously (I/V) [(Containing Calcium Borogluconate I.P) (Company name- Elanco)] for 1 day; Inj. Dextrose Normal Saline (5%) - 100ml I/V for 1 day; Inj. Melonex -0.8ml intramuscularly (I/M) [(Containing Meloxicam 5mg/ml) (Company name- Intas Pharmaceuticals Ltd.)] for 3 days; Inj. Dexona vet – 1.5 ml I/M [(Containing Dexamethasone Sodium- 4mg/ml) (Company name- Zydus Cadila)] for 1 day and a course of antibiotic Inj. Intacef -10 mg/kg body weight I/M [(containing Ceftriaxone) (Company name Intas Pharmaceuticals Ltd)] for 5 days.

Following the delivery, the dead fetus was thoroughly examined. It displayed characteristics of hydrocephalus as described by Noakes D E *et al*. (2001) [12] and Arulkumar S *et al*. (2022) [1], with a very large head filled with fluid and soft skull bones (figure 1). Additionally, The spine was abnormally curved backwards, hind limbs were ankylosed, and the intestinal contents were exposed to the outside environment through a fissure measuring 6 × 4 cm located just end of the sternum to the anterior aspect of the pubic bone, indicating *Schistosomus reflexu*s (figure 2), similar observation were also recorded by Dennis and Mayer. 1965 [3], Chakraborty D *et al*., 2011 [2], Kalita D., *et al*. 2004 [7], and Kumar B *et al*. 2016 [10] in goats.

Fig 1: Hydrocephalus

Fig 2: *Schistosomus reflexus*

Fetal or maternal factors can cause dystocia. Altered production and absorption of cerebrospinal fluid, as well as disturbances in normal circulation, may cause hydrocephalus (Fride R L., 1975) [5]. Hussain and Zaid (2010) [6] suggested that fetal causes of dystocia are more common than maternal causes. The exact cause of hydrocephalus in this case is unclear, but it could be due to congenital and might be caused by autosomal recessive genes (Roberts S J, 1971) [13], alterations in genetic factors, infectious agents, and environmental factors (Kalman *et al*., 1989) [8]. Whereas *Schistosomas reflexes* is also a congenital defect that develops in the embryonic stage, and studies proposed that it may be due to incomplete penetrance of inherited autosomal recessive genes (Laughton KW *et al*., 2005) [11]. In most cases, dystocia due to such monstrosities is relieved by fetotomy or cesarean section, as proposed by Kumar A. *et al*., 2018 and Divya V & Chaithanya S.C, 2016 [9]. However, there are no other reports available with both hydrocephalus and *Schistosomus reflexus* in a single fetus, except in this present report.

Conclusion

Dystocia can be caused by fetal or maternal factors. Hydrocephalus and *Schistosomus reflexus* are congenital defects with unknown causes. Dystocia due to these factors can be relieved by fetotomy or cesarean section. This present report is unique as it involves both defects in a single fetus.

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Conflict of interest

There is no conflict of interest between authors.

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