

Schistosomus reflexus from a Holstein –Friesian cow- Case Report

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Abstract

A 5-year-old Holstein-Friesian cow was presented with a primary problem of difficult in parturition (Dystocia). This was the third calving for the cow. A disoriented foetus was palpated per rectum, and on vaginal examination the head of the foetus was palpated which was ventral to the body of the foetus. A caesareotomy (caesarean section) was performed which aided in the diagnosis of a *shistosomus reflexus*. The *shistosomus reflexus* was examined grossly and the features observed were exposed abdominal organs, malformed skeleton, improperly positioned limbs which were adjacent to the head. Scoliosis (u shaped or curved spine) and this severe spinal inversion resulted in the head lying in close approximation to the sacrum.

Keywords: Dystocia, *shistosomus reflexus*, caesarean section, foetotomy

Introduction

Inherited congenital anomalies are probably present in all breeds of cattle and propagated as a result of specific trait selection. In some breeds, the occurrence of inherited anomalies has become frequent, and economically important (Whitlock, 2010). A variety of malformations resulting in specific foetal phenotypes and conjoined twins have been described as sporadic causes of dystocia in cattle

(Youngquist and Threlfall, 2007). The incidence of foetal monsters is relatively high in the cow; they are generally of the distorted and celosomian types, *schistosomus reflexus* and *perosomus elumbis* being commonest. Many studies have identified the influence of calf birth weight on ease of calving. However, the ability of a calf to be expelled unaided through the birth canal at parturition is dependent on its shape or conformation. This is seen in the most extreme situation of some foetal monsters such as schistosomes (Noakes *et al.*, 2001).

The definite cause of the *schistosomus reflexus* is not yet found but it could be due to genetic causes and hence the foetus must inherit a recessive gene from both the dam and sire which leads to defects in the embryological development of the foetus resulting in failure of the abdominal wall to close and in the exposure of the abdominal contents. (Laughton *et al.*, 2005).

This congenital defect could be caused by teratogens causing abnormalities in the developing embryo or foetus. Teratogens include drugs, hormones, chemicals, viruses, toxic plants, high body temperature etc. Vulnerability of the developing foetus varies at different stages of gestation because each organ and structure has a critical period of development during which it can be altered by harmful external influences (Azawi *et al.*, 2012).

Schistosomus reflexus is by far the commonest gross structural defect in cattle, it is a birth defect resulting in the malformation of the entire body. Occasional cases are born normally without assistance and others may be extracted with moderate traction. Most affected foetuses, however, cause dystocia because the characteristic angulation of the spine greatly increases the cross-operational diameter, although the body weight may be less than normal for the breed. The foetus is presented in one of two ways; its exposed viscera may protrude from the vulva or the limbs and head may lie in the vagina and can be felt to be attached to the misshapen trunk. The latter presentation may be confusing in cases in which the appendages are enclosed in an inverted pouch of the skin which is all that can be palpated. Cases of *schistosomus reflexus* occur sporadically in several breeds, sometimes as twin to a normal foetus, and are often still alive at delivery. It is noticeable that they are seldom associated with protracted parturition, presumably because they cause obvious manifestations of dystocia. The dystocia can be relieved by either foetotomy or a caesarean operation. If hysterotomy is performed, longer-than-normal abdominal and uterine incisions may be necessary and care is essential in manipulating the foetus from the uterus in order to avoid uterine tearing, which easily follows excessive traction. This manoeuvre is usually facilitated by the lubricant effect of residual amniotic fluid. The prognosis after a caesarean

operation is excellent, but the dam should not be rebred to the same sire. (Noakes *et al.*, 2001).

Results and Discussion

A five year old Holstein Friesian cow was due for parturition on 14th march 2013 at the farm in Lusaka west, Zambia. The cow was from a herd size of 80 which is managed semi-intensively. The cow was seen straining un-fruitfully for 7hours. The owner with the assistance of a veterinary assistant tried to use traction but failed and later called a veterinarian after 12 hours from onset of labour. Upon arrival at the farm the cow was recumbent and was grinding its teeth (Odontoprisis). An emergency caesarean section was done which took about two hours with the cow in right lateral recumbency (Fig. 1). A malformed foetus was removed and a diagnosis of *schistosomus reflexus* was made and the surgery was completed successfully (Fig. 2). The foetus was photographed and described grossly. This fatal congenital syndrome was characterized by the presence of exposed abdominal and thoracic viscera and marked spinal inversion producing a distinctive ventral convex curvature.

In fact, all organs and systems displayed an irregular orientation, with the exception of the head and neck and spinal inversion was striking. The sternum was fully cleft, and the left and right segments were reflected dorsocranially. Ribs and costal cartilages were intact. However, they were reflected dorsocranially, such that their interior surfaces were directed exteriorly. All four limbs were ankylosed, oriented

Fig. 1: Surgical Site Preparation



Fig. 1. note the position of the cow in right lateral recumbency

Fig. 2: *Schistosomus reflexus* foetus being exteriorized from the uterus



Fig. 2: note the thickened joint of the limb

parallel to the mandible of the skull and extended beyond the head (Fig. 3). The lungs had normal lobation and an enlarged, abnormally oriented, cystic liver covered both the lungs and the right ventricle of the heart. The small and large intestine appeared grossly normal.



Fig. 3: Note the malformed limbs, exposed abdominal/thoracic viscera

It was not easy to exteriorize the foetus because of its disorientation and care had to be taken so as to avoid causing lacerations to the uterus. The foetus was finally exteriorized and it was already dead and malformed (Fig. 3)

This was the only case of foetal malformation that occurred at the farm and no any other foetal abnormalities have been observed on that farm to date.

The present case confirms the suggestion that *schistosomus reflexus* is a congenital defect syndrome defined by a consistent set of features. On vaginal examination of the dam before a caesareotomy was done, the limbs and head of the foetus were lying in the vagina and were felt to be attached to the misshapen trunk while rectal examination revealed a disoriented foetus. The foetus was examined and the following features were observed: extreme ventral curvature of the spine (angulation of the spine also called scoliosis) causing the head to be positioned near the sacrum. The abdominal and thoracic walls were not closed, and the viscera were exposed. The Limbs of the affected foetus were rigid because of ankylosis of the joints and were improperly positioned and the tongue was protruding and the skeleton was malformed, this supports the findings of Youngquist and Threlfall (2007) in *schistosomus reflexus* foetus cases. The dystocia in this case was due to fetopelvic disproportion and extreme malposture and hence an emergency caesarean section had to be done in order to solve the problem, this is in line with Youngquist and Threlfall (2007) who stated that, a *shistosomus reflexus* foetus cannot be withdrawn from the uterus using traction. The *shistosomus reflexus* foetus was difficult to remove because it was disoriented making it difficult to easily exteriorize the foetus from the uterus and thus care was used to remove the foetus from the uterus through a uterine incision that was large enough so as to avoid uterine damage which can lead to serious post-operative complications.

Conclusion

This was the first reported case of *schistosomus reflexus* foetus in Zambia. According to Noakes *et al.* (2001), the incidence of foetal monsters is relatively high in the cow and the commonest being the *schistosomus reflexus* as was observed in this case. Identification of the aetiology of the developmental anomalies is often extremely difficult for several reasons. First, defective development alone often does not give clues to the specific cause and according to Rousseaux and Ribble-(1988): specific teratogens such as viruses, plants and toxins cannot be demonstrated at the time of expulsion of the defective foetus or even after intensive pathological and toxicological investigations. Therefore, if a cause cannot be determined attempts to determine the occurrence should be undertaken which involves the pathologists, geneticists, biometricians and epidemiologists.

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