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Incidence of Congenital Malformations in Ruminants in the North Eastern Region of Nigeria

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Abstract: A Survey on the incidence of congenital malformations of the ruminants was conducted from Jan. 2001 – April 2002. The specimens collected were grossly examined and either dissected or radiographed. A total of 11 cases of malformations were recorded, out of which 5 (45.5%) were of ovine species, 4 (36.4%) cases from caprine and 2 cases (18.2%) were from bovine species. Seven of the cases were found in fetuses while 2 cases each were observed in full term and postnatal respectively. The deformities observed were those of the limbs (36.36%), craniofacial defects (18.18%), postural defects (18.18%) and abnormal twinning (27.27%). It was concluded that inadequate nutritional requirement may be responsible for the animals feeding on any available materials including toxic plants. A study on phytoteratogens is suggested so as to identify the existing ones within the study area.

Key words: Congenital, incidence, malformations and ruminants

INTRODUCTION

Abnormalities present at birth, that results from errors arising during development are as numerous as their causes and affect all species of domestic animals. The causes range from genetic to environmental or combination of both. Irrespective of the cause, the defects may affect a single structure or function , involving several body system or combine structural and functional alterations; which consequently result in economic losses by increasing perinatal mortality , decrease maternal productivity and reducing the value of defective animal (Dennis and Leipold, 1979).

The frequency of individual congenital defect will vary with such factors like breed, geographical area, year, sex, parental age, level of nutrition and environmental factors.

North-eastern Nigeria is characterized with low rain fall, less pasture and harsh environment; yet highly blessed with livestock population. There exist a dearth of information about the likely birth defects and their likely causes within the region. This work was aimed at identifying the possible existing congenital defects.

MATERIALS AND METHODS

Incidences of congenital abnormalities in the North-eastern Nigeria was examined between January 2001 and April 2002. The samples collected were preserved in 10% formalin and in areas far from the laboratory, the samples were preserved in saturated Sodium chloride (NaCl) solution, and transported to the laboratory where they were transferred into the 10% formalin. Crown-rump length and bodyweight methods were used to age the fetuses (Sivachelvan *et al*., 1996). A measuring tape and Top pan weighing balance were used in the age determination.

Samples collected were grossly studied and where necessary, radiography and gross dissection were employed using scapel, blades, forceps and tissues retractors. Case history of each case was also recorded.

RESULTS

Eleven cases were recorded over a period of 15 months. About forty five percent (45.4%) of the cases were ovine species, 36.4% caprine and bovine species constituted 18.2%. Table 1 shows the distribution of cases on species and condition basis. Four of the cases were full term and delivered normally, two of which were co-joined twins.

The rest of the cases (63.6%) were fetuses found at abattoir where dams were presented for slaughter. Deformities observed were those of limbs (36.4%); craniofacial (18.2%) and cases of abnormal twinning constituted 27.3%. Sex distribution of cases is shown on Table 2. Eight (72.7%) of the cases were males, while 2 cases were females; the remaining one was unsexed. Fig. 1-11 shows the various deformities recorded.

DISCUSSION

Limb defects, peromelia, phocomelia, arthrogryposis and perosomus elumbis are features characterised by the failure of the distal extremity, proximal extremity, rigidity (ankylosis) of joint(s) in flexion or extension and hypoplasia or aplasia of the spinal cord of the fetus which end up in the thoracic region respectively (Dennis and Leipold, 1979; Arthur *et al*., 1993).

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Table 1: Types and Species distribution of Anomalies observed.

Anomaly	Ovine	Caprine	Bovine	Total	%
Limb	2	2	-	4	36.36
Craniofacial	1	1	-	2	18.18
Conjoined twinning	1	1	-	2	18.18
Asymetrical twinning	1	-	-	1	09.10
Postural	-	-	2	2	18.18
Total	5	4	2	11	100

Table 2: Sex and Species distribution of cases

Species	Male	Female	Unsex	Total
Bovine	2	-	-	2
Caprine	3	1	-	4
Ovine	3	1	1	5
Total	8	2	1	11

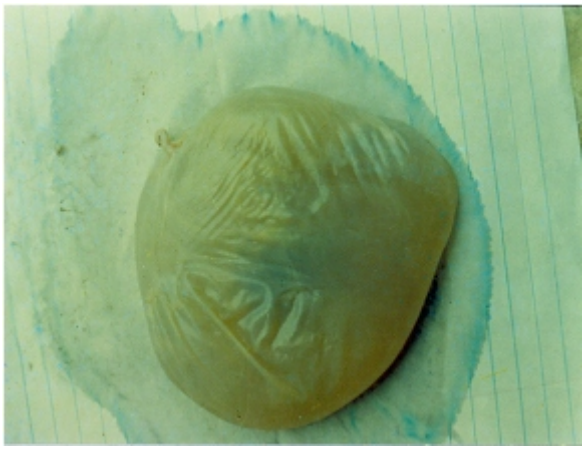

Fig. 1a: An asymmetrical twin surrounded by amniotic cavity in ovine.

Fig. 1b: The fetus obtained after removal of amniotic membrane

Perosomus elumbis found in caprine in this study, is one of the three commonest abnormalities of bovine, others being schistosomal reflexus and conjoined twins (Arthur *et al*., 1993). Knight and Walter (2004) incriminated teratogens like locoweed, wild and cultivated tobacco as causes of musculoskeletal anomalies. Similarly conjoined twins were found in ovine and caprine species in this study, though Arthur *et al.* (1993) reported that it's a common condition of bovine.

Of paramount interest in this study was the recorded case of superfitation. A condition in which a pregnant

Fig. 2: Craniofacial deformity due to over grown nasal chonchae in Caprine fetus (7-9 weeks)

Fig. 3: Peromelia in Ovine fetus (9-11 weeks)

Fig. 4a: Caprine Conjoined twins (monoprosopus abdomino-cephalophagus diacaudatus tetrabracius tetrascelus twins)-Full term

Fig. 4b: Radiograph of 4a

Fig. 5a: Ovine Conjoined twins (Aprosopus thoraco-cephalophagus diacaudatus tetrabracius tetrascelus twins) – Full term

animal mates, ovulates and conceives a second fetus, consequently resulting in giving birth to fetuses of vary different sizes or two fetuses born at widely separate times. Such could have being the case, as the first fetus was at full term and the second one was just about the second trimester. Craniofacial defects, as observed in this study were very typical though the causes can not be ascertained, phytoteratogens and akabane viral infection could be incriminated (Kurogi *et al*., 1977; Luis *et al* 2002). Arthrogryposis and postural defect (chiefly flexion of the head) could be associated with relative fetal inertia.

Ovine species recorded the highest observed cases. Dennis and Leipold (1979) recorded 88 different congenital anomalies in sheep.

Fig. 5b: Radiograph of 5a

Fig. 6: Perosomus elumbis seen in 6 months old goat

Fig. 7: Phocomelia in ovine fetus(11-14 weeks)

Following the traditional system of grazing in the North Eastern states of Nigeria, it will not be a surprise to attribute to teratogenic plants most causes of congenital anomalies. Because of inadequate feeding especially in the dry season and early raining season, the animals may be tempted to feed on any available plants irrespective of palatability or toxicity of such plants, though Devendra

Fig. 8: Arthrogryphosis in bovine fetus (6-7weeks)

Fig. 9: Postural defect (Torticolis in combination with arthrogryphosis in bovine.(6-7 weeks)

Fig. 10: Cebocephaly (Monkey face) in a 2 day old Lamb

and McLeroy (1988) stated that goats can distinguish between bitter, sweet, salty and sour tastes but feeding habit of grazing goats vary not only with ecology but also with season of the year.

Fig. 11: Postural defect(kyphosis, scoliosis and torticolis complex) in Caprine fetus (9-11 weeks)

The traditional grazing system in the study area is an extensive management system in which large ruminants are given concentrate supplements and the small ruminants (sheep and goats) are not given thus exposing then to eating what ever is available during grazing.

It is therefore recommended that studies on phytoteratogens in the study area be carried out so as to identify and recommend a possible substitute to the grazing method. So also concentrate substitute should be introduced to small ruminants as well, to reduce their rate of exposure to toxic plants.

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