CONGENITAL TETRA-PEROMELIA IN A GRADED MURRAH BUFFALO CALF

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ABSTRACT

Peromelia is a rare congenital malformation with variable degrees of limb reduction defects involving the loss of distal structures. Reports of peromelia in buffalo calves are meagre and tetra-peromelia are the rarest. The present case is a report of female graded murrah calf that has all four limbs incompletely formed. Both the fore limbs were formed up to shoulder region only. The scapulae were well formed except glenoid cavity and rest of the limb was absent. Humerus was represented as a small tubercle attached to glenoid. Both the hind limbs were formed up to distal one third of femur and rest of the limb was completely absent. To the author's knowledge, this is the first report of tetra-peromelia in a graded murrah buffalo from India.

Keywords: congenital malformation, tetra-peromelia, buffalo calf, *Bubalus bubalis*, buffalo

INTRODUCTION

Congenital anomalies are abnormalities of either structure or function or both that present at birth. About 0.25 to 3.0% calves are born with congenital defects which are more pronounced in the musculoskeletal system (Roberts, 1971) and most of them are stillborn or short-lived (Ozmen, 2015). Abnormalities in morphology resultant of genetic aberrations like mutations, chromosomal aneuploidy and translocations are called malformations (Szczerbal *et al.*, 2006). Malformations may vary from lack of single structure to partial or complete lack of limbs and termed as amelia, micromelia, peromelia, polymelia and sirenomelia (Roberts, 1971). Peromelia is failure of distal appendicular parts to develop (Singh and Tayal, 2006). Usually the term peromelia is used synonymously with hemimelia, which means absence of part of limb. Tetra-peromelia is lack of distal appendicular parts in all four limbs. Peromelia was reported in cow calves (Ozenc, 2014; Ozmen, 2015), goats (Ramadan *et al*., 1998), dogs (Lallo *et al*., 2001) and a single report in buffalo calves (Albarella *et al*., 2009). All these animals were lacking one or two limbs. To the author's knowledge, this may be the first case of tetra-peromelia in a graded murrah calf reported from India.

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CASE HISTORY AND OBSERVATION

A female buffalo calf aged about twenty days was brought for deworming to an animal health camp conducted at Veterinary Dispensary, Nizampatnam, Guntur district, Andhra Pradesh, India. The calf was healthy except that all the four limbs were absent congenitally. It was born to a graded murrah heifer, which was served by a bull. History further revealed that neither the sire and dam of that heifer nor progeny of that bull were having any structural or functional abnormalities.

The calf was normal in all physiological parameters. The fore limbs were developed up to the shoulder only (Figure 1). Anatomically both the scapulae were well developed, but the glenoid cavity was rounded and the humerus represented by a small tubercle attached anterio lateral to glenoid. Parts below the level of humerus were absent. Both the hind limbs were also malformed and developed up to lower one third of femur (Figure 2). Parts distal to femur like tibia-fibula, metatarsal and digits were absent, but the thigh musculature was well developed. Except these abnormalities, whole appendicular and axial skeletons were normal.

DISCUSSION

Aetiological factor for the present musculoskeletal anomaly may not be traced but gene mutations, toxic, viral, infectious, environmental factors might have played a role (Roberts, 1971; Samuel *et al*., 2015). Agerholm *et al*. (1997) demonstrated peromelia as an inherited autosomal recessive gene defect that showed no sex predilection. Study of Szczerbal *et al*. (2006); Di Berardino *et al*. (1983) attributed congenital malformations in calves to high rate of chromosomal instability. Initial stages of blastogenesis or organogenesis are the crucial stage for occurrence of malformations in one or more systems in body (Opitz *et al*., 2002). Anamnesis revealed normal pedigree of the dam and progeny of sire in the past and present and parents of the mother were normal, hence, this anomaly may be attributed purely to the genetic aberrations during early stages of organogenesis. Based on the anatomico - pathological features, the present case has been termed as tetra-peromelia or scapular and femoral hemimelia as per Roberts (1971).

The parts below the level of scapula and femur are completely absent or vestigial. Ozenc

Figure 1. Photograph showing buffalo calf with tetra-peromelia.

Figure 2. Photograph showing tetra-peromelia calf in different angle.

(2014) also reported similar case of tetra peromelia in a new born calf. Few cases of peromelia were reported in goats (Ramadan *et al*., 1998) and calves (Smolec *et al*., 2011; Ozmen, 2015) but, only one limb that too one of the fore limb were affected in most cases. Albarella *et al*. (2009) reported unilateral peromelia/ transversal hemimelia in Italian buffalo calves at the level of proximal epiphysis of metatarsus and tibia. Usually the foetuses were stillborn or die shortly after birth, rarely survives as in the case of Ozmen (2015) and Ozenc (2014) as they were devoid of concurrent anomalies like cleft palate, defects in nervous system and cardiovascular system. The present case is also not having any other anomaly and still leading good life with untiring efforts of the farmer. As this case may be due to genetic aberrations which may inherit the abnormality and the calf when grow to adult it may face some difficulty in its reproductive future. Hence, it was advised not to breed the animal.

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